Wild, Threatened, Farmed:

Hong Kong’s Invisible Pets

May 2022
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Note: Following the publication of this report, the Hong Kong Government Environment Bureau (ENB) has been re-designated as the Environment & Ecology Bureau (EEB) as of July 2023. The Bureau’s website has accordingly changed from enb.gov.hk to eeb.gov.hk, affecting a number of the references provided in this report.

Abbreviations

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAH</td>
<td>Airport Animal Hostel</td>
</tr>
<tr>
<td>ACCO</td>
<td>Alliance to Counter Crime Online</td>
</tr>
<tr>
<td>AFCD</td>
<td>Hong Kong Government Agriculture, Fisheries and Conservation Department</td>
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<tr>
<td>AI</td>
<td>Avian influenza</td>
</tr>
<tr>
<td>AMC</td>
<td>Animal Management Centre</td>
</tr>
<tr>
<td>AMD</td>
<td>Animal Management Division</td>
</tr>
<tr>
<td>ATL</td>
<td>Animal Trader License</td>
</tr>
<tr>
<td>AWAG</td>
<td>Animal Welfare Advisory Group</td>
</tr>
<tr>
<td>BSAP</td>
<td>Biodiversity Strategy and Action Plan</td>
</tr>
<tr>
<td>C&amp;ED</td>
<td>Hong Kong Government Customs and Excise Department</td>
</tr>
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<td>C&amp;S</td>
<td>Hong Kong Government Census and Statistic Department</td>
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<tr>
<td>CA</td>
<td>Conservancy Association</td>
</tr>
<tr>
<td>CHP</td>
<td>Centre for Health Protection</td>
</tr>
<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora</td>
</tr>
<tr>
<td>COS</td>
<td>Codes of Standards</td>
</tr>
<tr>
<td>CR</td>
<td>Critically Endangered species, i.e., facing an extremely high risk of extinction in the wild</td>
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<tr>
<td>DD</td>
<td>Data Deficient</td>
</tr>
<tr>
<td>EN</td>
<td>Endangered species, i.e., facing a very high risk of extinction in the wild</td>
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<tr>
<td>ENB</td>
<td>Hong Kong Government Environment Bureau</td>
</tr>
<tr>
<td>ESAC</td>
<td>Endangered Species Advisory Committee</td>
</tr>
<tr>
<td>ESLES</td>
<td>Endangered Species Licensing and Enforcement System</td>
</tr>
<tr>
<td>ESPD</td>
<td>Endangered Species Protection Division</td>
</tr>
<tr>
<td>FAWAC</td>
<td>Farm Animal Welfare Advisory Committee</td>
</tr>
<tr>
<td>FEHD</td>
<td>Hong Kong Government Food and Environmental Hygiene Department</td>
</tr>
<tr>
<td>FHB</td>
<td>Hong Kong Government Food &amp; Health Bureau</td>
</tr>
<tr>
<td>HKBA</td>
<td>Hong Kong Buddhist Association</td>
</tr>
<tr>
<td>HKBWS</td>
<td>Hong Kong Bird Watching Society</td>
</tr>
<tr>
<td>HKIA</td>
<td>Hong Kong International Airport</td>
</tr>
<tr>
<td>HKPIC</td>
<td>Hong Kong Poison Information Centre</td>
</tr>
<tr>
<td>HKU</td>
<td>University of Hong Kong</td>
</tr>
<tr>
<td>HKHS</td>
<td>Hong Kong Harmonised System</td>
</tr>
<tr>
<td>IAS</td>
<td>Invasive Alien Species</td>
</tr>
<tr>
<td>IED</td>
<td>Import and Export Division</td>
</tr>
<tr>
<td>ITB</td>
<td>Interaction with transparent boundaries</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
</tr>
<tr>
<td>KFBG</td>
<td>Kadoorie Farm and Botanic Garden</td>
</tr>
<tr>
<td>LC</td>
<td>Least Concern species, i.e., those that do not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened.</td>
</tr>
<tr>
<td>LTS</td>
<td>List of Threatened Species</td>
</tr>
<tr>
<td>NAD</td>
<td>Notifiable Animal Disease</td>
</tr>
<tr>
<td>Nesoi</td>
<td>Not Elsewhere Specified or Indicated</td>
</tr>
<tr>
<td>NSHP</td>
<td>Nutritional secondary hyperparathyroidism</td>
</tr>
<tr>
<td>LT</td>
<td>Near Threatened species, i.e., close to qualifying for or is likely to qualify for a threatened category in the near future.</td>
</tr>
<tr>
<td>OHHLEP</td>
<td>One Health High-Level Expert Panel</td>
</tr>
<tr>
<td>OIE</td>
<td>World Organisation for Animal Health</td>
</tr>
<tr>
<td>OSCO</td>
<td>Cap. 455 Organized and Serious Crimes Ordinance</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase chain reaction</td>
</tr>
<tr>
<td>PESAP</td>
<td>Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance</td>
</tr>
<tr>
<td>PHABO</td>
<td>Cap. 139 Public Health (Animals and Birds) Ordinance</td>
</tr>
<tr>
<td>PL</td>
<td>Possession License</td>
</tr>
<tr>
<td>PPO</td>
<td>Private Pet Owner</td>
</tr>
<tr>
<td>SIA</td>
<td>Stable isotope analysis</td>
</tr>
<tr>
<td>SND</td>
<td>Statutory Notifiable Disease</td>
</tr>
<tr>
<td>SPCA</td>
<td>Society for the Prevention of Cruelty to Animals</td>
</tr>
<tr>
<td>SVO</td>
<td>Senior Veterinary Officer</td>
</tr>
<tr>
<td>TCM</td>
<td>Traditional Chinese Medicine</td>
</tr>
<tr>
<td>UNEP WCMC</td>
<td>United Nations Environment Programme World Conservation Monitoring Centre</td>
</tr>
<tr>
<td>UNODC</td>
<td>United Nations Office on Drugs and Crime</td>
</tr>
<tr>
<td>UVB</td>
<td>Ultraviolet radiation (280 to 320 nm)</td>
</tr>
<tr>
<td>VSB</td>
<td>Veterinary Surgeons Board</td>
</tr>
<tr>
<td>VU</td>
<td>Vulnerable species, i.e., facing a high risk of extinction in the wild</td>
</tr>
<tr>
<td>WAPO</td>
<td>Cap. 170 Wild Animals Protection Ordinance</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>

Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alien species</td>
<td>Non-native species.</td>
</tr>
<tr>
<td>Animal Trader License</td>
<td>A licence issued to a person who sells, or offers to sell, animals or birds, other than those kept by the person as a pet or the offspring thereof.</td>
</tr>
<tr>
<td>Biosecurity</td>
<td>A set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population.</td>
</tr>
<tr>
<td>Biosurveillance</td>
<td>Monitoring of information from a variety of human, animal, plant, and environmental health sources for the purposes of detecting and managing outbreaks or other public health events, whether naturally occurring or deliberate.</td>
</tr>
<tr>
<td>Captive-bred</td>
<td>Animals bred or reared in captivity rather than being taken directly from the wild. Under CITES, this would include animals born and reared in captivity, sometime sourced from wild populations (i.e., ranched – see below).</td>
</tr>
<tr>
<td>Epizootic</td>
<td>A disease or disorder in a population of non-human animals at a frequency higher than that expected in a given time period.</td>
</tr>
<tr>
<td>Exotic pet</td>
<td>For the purposes of this report, the trade in exotic pets includes small mammals (i.e., rabbits, rodents, ferrets, hedgehogs), birds, reptiles, amphibians and arthropods. Aquaria species, including fish and marine invertebrates (i.e., corals, molluscs), are not included. Domestic cats and dogs are also excluded.</td>
</tr>
<tr>
<td>Host</td>
<td>A species (human or non-human animal) that can be infected with or capable of supporting a microorganism in its body.</td>
</tr>
<tr>
<td>Husbandry</td>
<td>The care and maintenance of animals in captivity, which includes providing proper nutrition, housing, lighting, temperature and humidity, environmental enrichment etc.</td>
</tr>
<tr>
<td>Infectious disease</td>
<td>A transmissible organism caused by pathogens (organisms, such as bacteria, viruses, fungi, helminths and other parasites) that causes pathology and dysfunction (disease) in a host.</td>
</tr>
<tr>
<td>Invasive species</td>
<td>Invasive (alien) species are those introduced, either accidentally or intentionally, from outside of their natural geographic range into local ecosystems that become problematic.</td>
</tr>
<tr>
<td>IUCN Red List</td>
<td>The world’s most comprehensive inventory of the global conservation status of biological species, providing the results of assessments to determine the extinction risk of thousands of species and subspecies.</td>
</tr>
<tr>
<td>Non-CITES species</td>
<td>Species that are not regulated in the international trade under CITES (see above).</td>
</tr>
<tr>
<td>Pathogen</td>
<td>An organism that is capable of causing disease. Another name for a pathogen is an infectious agent.</td>
</tr>
<tr>
<td>Possession License</td>
<td>A licence issued by the AFCD in Hong Kong, required to possess for commercial purposes CITES Appendix I captive-bred animals and Appendix II CITES-listed animal of wild origin.</td>
</tr>
<tr>
<td>Ranched animals</td>
<td>Animals reared in a controlled environment, having been taken as eggs or juveniles from the wild.</td>
</tr>
<tr>
<td>Taxa</td>
<td>A taxonomic group of any rank, such as a species, e.g., African spurred tortoise, family, e.g., Testudinidae or class, e.g., reptile.</td>
</tr>
<tr>
<td>Threatened species</td>
<td>Species assessed by the IUCN to be Critically Endangered, Endangered or Vulnerable.</td>
</tr>
<tr>
<td>Zoonosis</td>
<td>A disease, infection or infestation transmitted under natural conditions from vertebrate animals to humans.</td>
</tr>
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Part I
Hong Kong’s Invisible Pets

1 Background

1.1 Report Rationale

The world is facing a biodiversity crisis driven by land-use and climate change, pollution, the spread of invasive alien species and overexploitation. The large-scale extraction of exotic animals from their ecosystems for the global pet trade contributes to this situation, exerting extreme and highly targeted pressure on thousands of species.

Exotic pets have been kept throughout history, but the demand for rare and unusual creatures has exploded in recent years. Much of this can likely be attributed to increased affluence, ease of acquisition and the popularisation of pet keeping through traditional and social media.

Incentivised by its lucrative nature and low barriers to entry, the global pet trade is a multi-billion-dollar industry, involving millions of animals from thousands of species. As of 2019, Europeans reportedly owned 90 million pet birds, small mammals and reptiles, Mainland Chinese possessed a further 23 million and Americans had over 15 million. Whilst likely conservative, these figures paint a clear picture of the sheer volume of live exotics living alongside humans around the world. It is evident that humans are exerting tremendous pressure on biodiversity and that demand for exotic pets is a driver.

From 2015 to 2019, Hong Kong traders imported at least four million exotics (excluding aquaria) from 84 countries. Although this trade has not been well documented, its growth and diversification in recent years points towards it being a vast and profitable industry. While the numbers of exotic animals imported provides some indication of demand, the size of pet populations in the domestic trade and private hands are unknown.

In Hong Kong, publicly available data on exotic pet ownership is now at least 15 years out-dated, but census statistics in 2005 indicated approximately 228,000 exotic animals (excluding cats and dogs) were distributed across Hong Kong households. Around 1 in 5 pet owning households possessed a turtle or tortoise and nearly 1 in 10 had a bird. However, the dynamics of the trade are constantly changing and the volume of imports of exotic pet species have since grown dramatically, indicating that the local demand has risen markedly and that the time is ripe for a comprehensive review of the trade and its regulation.

1.2 A Game Changer

The rationale for this report predates the COVID-19 pandemic. Its original aim was to consolidate the latest available information, data and insights on Hong Kong’s considerable trade in live exotic animals for pets and to review the sufficiency of regulations in safeguarding animal and environmental health.

The pandemic provided a stark reminder of the public health concerns of trading live animals. The ensuing disruption to the world’s economy and global population consequently brought into focus the “One Health” concept (Box 1), as an approach for achieving optimum health outcomes.

In 2021, FAO, OIE, WHO and UNEP welcomed a newly formed operational definition of “One Health” from their advisory panel (the One Health High-Level Expert Panel; OHHLEP), that defines One Health as “an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.”

Box 1
The One Health Concept

The One Health concept is more than a century old and was founded upon the understanding that human health and animal health are interdependent and bound to the health of the ecosystems in which they exist.

The momentum associated with the One Health concept during the past decade was driven initially by a series of strategic goals known as the ‘Manhattan Principles’. In 2016 the concept of ‘One Welfare’ emerged, emphasizing the connections between animal welfare, human well-being, conservation and the environment. Adapted from Joint Tripartite (FAO, OIE, WHO) and UNEP Statement (2021).
The report therefore additionally aims to highlight some of the public health and animal welfare concerns arising from Hong Kong’s exotic pet trade, as well as the timeliness and suitability of the ‘One Health, One Welfare’ framework for addressing many of the issues observed in the local trade.

The report is intended to inform lawmakers and the public alike, and stimulate discussion and action around improved, more holistic policies. The specific objectives of this report are to:

- shed light on the scale and nature of the exotic pet trade in Hong Kong;
- identify key areas of concern regarding impacts on biodiversity, animal and public health and animal welfare;
- identify areas for policy and regulatory reform; and
- raise awareness of these issues and stimulate public discussion.

The report has correspondingly been structured in three parts:

- Part I documents the scale and nature of Hong Kong’s exotic pet trade using publicly available data and, in doing so, highlights environmental, animal and public health concerns;
- Part II reviews the current legislative framework highlighting gaps and weaknesses; and
- Part III suggests policy reforms regarding aspects of the trade.

Appendices A-I provide additional details that support the report findings, including case studies, data and in particular further explanation of animal health concerns that persist in Hong Kong’s exotic pet trade.

### Methodology

Definitions of what constitutes an exotic animal/pet varies (e.g., non-native species to a region; non-domesticated species of pets including wild animals; non-traditional or unusual species of pets; or any animal that is kept as a pet but not a dog, cat, or large farm animal). For the purposes of this report, the trade in exotic pets includes small mammals (e.g., rabbits, rodents, ferrets, hedgehogs), birds, reptiles, amphibians and arthropods. Aquaria species, including fish and marine invertebrates (e.g., corals, molluscs), are not included. Domestic cats and dogs are also excluded.

There is no single consistent repository of data to track the import, export, re-export or domestic trade of live exotic animals in Hong Kong. Multiple data sources were therefore collated, consolidated and analysed to gain the most comprehensive insights. Three main data sources were used (see Appendix A for further details):

1. Hong Kong Government Census and Statistic Department (C&SD), Trade Statistics
2. Hong Kong Government Agriculture Fisheries and Conservation Department (AFCD), Trade Data
3. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Trade Data

While the datasets span a variety of time periods, all date ranges presented are inclusive, i.e., a period defined as 2010 to 2019 represents 5 years.

An extensive literature review was also undertaken to provide context and additional perspectives concerning the exotic pet trade.

### Data Sources

Table 1 provides a summary of the data from 2015 to 2019 from the C&SD, as well as from divisions of the AFCD. It should be noted that the import numbers from the C&SD and AFCD datasets are not directly comparable (Sections 2.2 and 2.4 below). The C&SD figures should be considered as a broad indication of the trade of exotics into and out of the city. The AFCD datasets provide supplementary detail, indicating finer-scale trends, species composition and dynamics. They are understood by this report’s authors to represent a subset of the C&SD data, but AFCD data for some taxa is actually more extensive.

Table 1

<table>
<thead>
<tr>
<th>HS Code</th>
<th>HS Commodity Description</th>
<th>C&amp;SD</th>
<th>AFCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Live animals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0101</td>
<td>Other live animals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

- nesoi - Not Elsewhere Specified or Indicated
- * denotes that the volume indicated cannot be differentiated in terms of food and not-for-food i.e. pets. This is because the CITES data was provided for live animals imported for non-specified “Commercial” purposes and the non-CITES data, end use data is not available. Based on a review of the species involved and typical uses, it is estimated that the majority are most likely intended as pets and are subsequently treated as such.
- † denotes that the majority of the animals were household pets.

<table>
<thead>
<tr>
<th>Species</th>
<th>C&amp;SD</th>
<th>AFCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphipods</td>
<td>2,507,949</td>
<td>22,376†</td>
</tr>
<tr>
<td>Insects</td>
<td>3,229,962</td>
<td>31,227</td>
</tr>
<tr>
<td>Other live animals</td>
<td>1,162,914</td>
<td>10,970</td>
</tr>
<tr>
<td>Overall total</td>
<td>24,387,516</td>
<td>233,871*</td>
</tr>
</tbody>
</table>


Notes:

- * denotes that the volume indicated cannot be differentiated in terms of food and not-for-food i.e. pets. This is because the CITES data was provided for live animals imported for non-specified “Commercial” purposes and the non-CITES data, end use data is not available. Based on a review of the species involved and typical uses, it is estimated that the majority are most likely intended as pets and are subsequently treated as such.
- † denotes that the majority of the animals were household pets.

Within the CITES data, only those animals explicitly imported for “Commercial” purposes have been analysed, meaning that animals reported as being imported for any other purpose (personal, scientific, educational, forensic, etc.) were excluded from the analysis.
The C&SD records the overall numbers of live animal imports/exports/re-exports including end use, country of origin, mode of transport, categorised according to Hong Kong’s Harmonised System (HKHS) codes. The data, which is available online through the C&SD’s Interactive Data Dissemination Service for Trade Statistics, is generally provided at broad taxonomic levels which do not, in most cases, allow for species identification (Table 1). However, it provides the best available overview of the scale, source countries and volume of live exotic species in trade.

Under the HKHS, certain designations are used that indicate the end purpose of the animals in trade: “mainly used for food”; “not for food”; and “nesoi” (not elsewhere specified or indicated). It is unclear whether Traditional Chinese Medicine (TCM) is included in the uses defined as ‘for food’.

For exotics imported as ‘not for food’, it is assumed these are mostly intended for the pet trade as indicated. However, 78% of the live exotic animals imported over the period reviewed had no specification, meaning that it was not possible to determine what purpose they were imported for. Nevertheless, it is considered likely that several taxa concerned were pet species based upon a review of the species recorded in trade (Sections 2 and 3.3), literature on domestic markets (Section 3.4) and the typical uses for such animals.

Fish and other aquaria species were, for the most part, excluded from the analysis as they are not well disaggregated by species or by end use, making it impossible to differentiate between species destined for the food trade from the pet trade. Even where a more specific designation was available, there is negligible data. For example, whilst the designation ‘live ornamental seahorses’ (HKHS code 03011030) has been in effect since 1998 and live seahorses have been imported under CITES, it does not appear that traders used the code when submitting to C&SD, as there are no imports recorded in the C&SD database, whereas AFCD has recorded imports of hundreds of live CITES-regulated seahorses. Presumably, traders opt to use the more generic codes, e.g., that include several items for mixed imports, rather than the more specific codes, such as ‘live ornamental fish, marine’.

The CITES Trade Database is a dataset managed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP WCMC) on behalf of the CITES Secretariat. It contains the records of millions of transactions relating to the international trade in wildlife species regulated under the Convention including taxonomic data, countries of origin, export and import volumes, product type, purpose, source and more. Data is received annually from the Parties to CITES. The database is among the most comprehensive archives of the global trade in wildlife (live and derivatives) and provides the most granular data on the trade in Hong Kong (Table 1).

While it is an extremely useful data source, the database is widely acknowledged (including by the CITES Secretariat itself) to be plagued by inconsistencies. In its 2013 guide, the Secretariat noted several “common departures” from the procedures (that are relevant to the trade in live animals), as follows:

- Many countries’ annual reports do not clearly state whether the data were derived from the actual number of specimens traded, or from the quantity for which the permits or certificates were originally issued (often the difference is considerable).
- Information on seized or confiscated specimens is often absent or provided in limited detail; and
- Information on the source of the product (e.g., wild-caught or bred in captivity) and the purpose of the trade (e.g., for commercial or non-commercial purposes) is sometimes lacking or interpreted in different ways by importing and exporting countries.

Under CITES, there is no explicit designation for imports for the pet trade. The closest indication is the CITES code ‘T’ for ‘Commercial’ products. However, this is a catch-all designation, that covers a variety of trades and purposes, including pet, cuisine, medicinal, fashion and so on. As such, further distillation of the data was required to provide an indication of the scale and composition of the local pet trade. This refinement was based upon a review of the species recorded in trade (Sections 2 and 3.3), literature on domestic markets (Section 3.4) and the typical uses for such animals.

The Hong Kong Government Environment Bureau (ENB) and Food and Health Bureau (FHB) periodically provide a variety of data regarding different aspects of the exotic pet trade via press releases, replies to lawmaker’s questions and in response to direct requests from interested parties. No single agency hosts or maintains a central database for the trade in all CITES and non-CITES species. This is likely a result of the segregation of responsibilities for different aspects of the exotic pet trade, across different divisions, under the purview of the AFCD (see Part II: Section 2.2).

One source of data is the Endangered Species Licensing and Enforcement System (ESLES), maintained by the Endangered Species Protection Division (ESPD) of AFCD, for tracking trade and seizures of CITES-regulated species. Trade in non-CITES species are understood to be recorded by the AFCD’s Import and Export Department (IED) and in some cases in ESLES.

The volume of exotic pet species in numerous categories (e.g., mammals, snakes, parrots) documented by AFCD was found to be markedly higher than collected by the C&SD whose data relies on customs declarations, indicating possible inconsistency in use of customs codes as noted above, or possible non-compliance with the legal requirement to submit said declarations.

Analysis of trade data is also challenged by the omission of details such as ‘source’ and ‘purpose’ for non-CITES species.
3 Overall Trade

The following section provides an analysis of volumes of live exotic animals in trade, with a focus on those traded as pets. As noted in Section 2, there is no one repository of data that tracks Hong Kong’s exotic pet trade. Instead multiple datasets have been examined as summarised below.

**Section 3.1** uses C&S&SD’s trade data to understand market dynamics at the broadest scale. Data is reviewed for the five-year period from 2015 to 2019, since this matches the period that data was available from AFCD (Section 3.3). Specifically this data provides an overview of the quantities of live exotic animals imported into Hong Kong, the purported end uses (food, not for food) and some insights into exports/re-exports. Species-specific trends cannot be determined, due to a lack of records at the species level.

**Section 3.2** attempts to understand longer-term trends and dynamics of species-specific trades. This has been achieved using the CITES Trade Database in combination with AFCD data on CITES imports (where genus and/or species are documented) covering the two decades from 2000 to 2019. All AFCD data was only available and analysed for 2015 to 2019. The CITES Trade Database was used to cover 2000 to 2014, noting that its data for 2015 to 2019 was less complete than that of the AFCD.

**Section 3.3** uses AFCD data on imports where both CITES and non-CITES species data were available, to provide perhaps the most complete and detailed species-specific account. These data were provided for the period 2015 to 2019 (Section 2.4).

Combined, these three datasets provide the most comprehensive account of the nature and extent of Hong Kong’s trade in exotic pets.

### 3.1 C&S&SD Data on Live Exotic Animal Imports (2015-2019)

**3.1.1 Overall Imports**

According to C&S&SD data, between 2015 and 2019, at least 24.4 million live terrestrial and semi-aquatic exotic animals (including those for consumption by humans, consumption by animals, for TCM and for the pet trade) were imported into Hong Kong. This is equivalent to around 13,400 live exotic animals arriving in the city every day.

The overwhelming majority were frogs, numbering 18.8 million. Although ‘end use’ was not specified (Figures 1 & 2), most were presumed to be destined for food, based on historic trade surveys\(^2\)\(^3\) and cross-referencing with CITES data\(^2\)\(^4\) (Table 1). However, it is unclear how many of the frogs are being imported for farming locally, for consumption by humans or as food for other animals, e.g., ‘feeder frogs’ fed to carnivorous or omnivorous pets such as terrapins and arowanas.

Similarly, ‘end use’ was not specified for the more than 207,300 snakes, parrots\(^2\)\(^5\), rabbits, insects and various mammals imported (Table 1 & Figures 1 & 2).

At least 3.6 million live exotic animals, however, were imported as “Not for food” and are thus presumed to be for the exotic pet trade (Table 1 & Figure 1).

---

**Figure 1**


Data Source: C&S&SD Trade Statistics (2021)

<table>
<thead>
<tr>
<th>Import Total</th>
<th>24.4 million</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Imports Mainly For Food</strong></td>
<td>1.8 million</td>
</tr>
<tr>
<td>Pigeons</td>
<td>0.3%</td>
</tr>
<tr>
<td>Live birds*</td>
<td>0.2%</td>
</tr>
<tr>
<td>Turtles &amp; tortoises</td>
<td>3%</td>
</tr>
<tr>
<td>Other reptiles</td>
<td>37%</td>
</tr>
<tr>
<td>Live birds</td>
<td>40%</td>
</tr>
<tr>
<td>Other taxa</td>
<td>80%</td>
</tr>
</tbody>
</table>

| **Imports Not For Food** | 3.6 million |
| Frog                 | 3%           |
| Other reptiles       | 3%           |
| Other live animals   | 99%          |
| Other taxa           | 99%          |

These figures consist of C&S&SD-data broken down by the end use (indicated under the HKHS).

While imports “Not for Food” can be assumed to be pets, it is likely that 207,300 of the unspecified animals included pets.

*Exclusion quails
3.1.2 Re-exports and Exports

According to C&SD trade statistics, compared to the 24.4 million live exotic animals imported, only around 454,500 live exotic animals were re-exported from Hong Kong between 2015 and 2019 (Figure 3). This equates to around 2% of the imported animals, and comprised, almost exclusively, reptiles (turtles and tortoises in particular) and birds.

Fewer than 26,500 exotics were exported, of which the largest proportion (43%) were reptiles, most likely exported as pets, and the remainder were frogs exported without a specified purpose.

Of the exports and re-exports, the majority (68%) were designated as 'Not For Food' and assumed to be pets, a quarter were identified as 'mainly used for food' and 5% were unspecified (Figure 3).

Though it is not possible to directly correlate animals departing with animals arriving, the differences between imports and re-exports imply that over 1.7 million exotics were consumed locally, and as many as 3.5 million live exotic animals potentially remained in the city in the pet trade (Table 1, Figures 3 & 4).
3.2 Longer Term Species-Specific Trends (2000-2019)

3.2.1 Introduction

Since C&SD data provide very little species-level information, additional information on species has been collated from CITES live animal trade data (AFCD and CITES Trade Database), comprising data on live animals imported under CITES (Box 2) for commercial purposes (considered to be mostly destined for the pet trade).

The following section therefore examines longer-term trade dynamics based on AFCD and CITES datasets for CITES-regulated species from 2000 to 2019 (Sections 3.2.2). This includes an overview of the significant source countries, key taxonomic groups and species traded in high volumes over these two decades.

Box 2
Introduction to CITES

CITES aims: “to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.”

At the time of writing this report, there were 38,750 species and subspecies regulated under CITES (85% flora and 15% fauna). The majority (87%) were regulated under Appendix II, i.e., species that are theoretically not immediately at risk of extinction but may become so, unless their trade is monitored and controlled.

Source: CITES Secretariat

38,750 species regulated

3.2.2 Species Trends

Of the 4.8 million CITES-regulated animals imported over these two decades, 98% were reptiles (Figure 5). Birds made up just 1.3% and all other taxa made less than 0.5%.

Turtles and Tortoises

Among the millions of reptiles from 203 species in trade, the majority arriving in Hong Kong were turtles and tortoises (Testudines spp.). The Yellow-spotted river turtle accounted for around 60% of turtles imported over this time period. Notably, their trade jumped from just 150 in 2005 and 2006 to a maximum of 627,700 in 2016. Their numbers topped 100,000 per year in 2012 and remained in the multiple hundreds of thousands through to 2019. A total of 2.3 million live Yellow-spotted river turtles were imported by Hong Kong traders from 2000 to 2019.

It has been speculated by some experts that demand may have switched to consumption, however, a review of news media, hobbyist forums and other relevant platforms strongly indicates that the species is mostly intended for the pet trade where they are prized for their colouring. However, the species does not appear to be abundant or popular locally and as re-export figures are relatively small (32,200 from 2015-2019), it remains unclear where the majority have gone.

The Amboina box turtle, which has been popular as food and in TCM in Mainland China, was imported in high volumes in the early 2000s but trade had diminished significantly by 2010. Market observations indicate that while the Amboina turtle was “abundant” in the 1990s, its inclusion in Hong Kong’s CITES legislation (Part II: Section 4) by 2002, bringing greater scrutiny and regulation, could explain its sudden documentation in the trade data, though the reasons for its decline are less clear.

The Common snapping turtle was added to CITES Appendix III by the USA in 2016 and has quickly become one of the top ten most traded CITES species in Hong Kong, with 72,800 imported in 2019 alone. The species has been in local markets since at least the 1990s and may have been traded in such volumes for some time, though this remains unclear due to a lack of available data.

African spurred tortoises, Herman’s tortoises and Red-footed tortoises were all traded in excess of 100,000 individuals over the past two decades.

Lizards and Snakes

Between 2000 and 2019, lizard imports were dominated by Common green iguanas, with over 360,700 arriving. Asian water monitors were also imported in large quantities, with around 101,000. However, they disappeared from the trade in 2014. As early as 2007, pet shops were barred from selling the species. As monitors disappeared from the trade, there was a surge in imports of other lizard species, namely the Common green iguana and Veiled chameleons.

Of the snakes, four species dominated the trade, with around 81,300 Ball pythons, 58,100 Oriental rat snakes and a mix of 38,900 Indian and Javan spitting cobras imported. These trades raise a number of issues:

- **Cobras**: Several cobra species (11 out of the 29 Naja species, including the Indian and Javan spitting) are regulated under CITES Appendix II. Under current AFCD policy, venomous species may only be kept by traders for food purposes. However, traders have acknowledged keeping them as pets. According to CITES trade data, cobras were last legally imported in 2011, though they appear to still be present in food premises, raising questions about their source (i.e., locally wild-caught, bred or illegally imported) and oversight of the trade (Box 3).

- **Oriental rat snakes**: 2011 and 2012 were the only years in which these snakes were imported. The species are not common as pets, being consumed in Mainland China as food and in TCM and used for their skin elsewhere in Asia and Europe. Despite not appearing in AFCD import records for many years, however, rat snake species remain popular in snake soup outlets in Hong Kong.
### 3.2.3 Country Trends

The 4.8 million live CITES-regulated animals (excluding aquaria) were imported for “Commercial” purposes from 68 countries (Figure 6). Re-exports amounted to approximately 172,800 CITES animals (having originated from 51 countries). Japan, Taiwan, South Korea, Mainland China and Indonesia were major recipients, of mostly turtles and tortoises. Just over 200 live CITES animals (mostly reptiles) were exported for commercial purposes to 11 countries.

By country, Peru, the USA, El Salvador, Malaysia and Indonesia (Figure 7 & 8) have supplied the largest volumes of animals for the exotic pet trade, accounting for 81%.

Hong Kong received 4 million live exotics from just ten CITES-regulated species. Over half of which were Yellow-spotted river turtles (Podocnemis unifilis) from Peru (Section 4.5 & Figure 7). The trade in this single species triggered a dramatic rise in Peru’s supply to Hong Kong from 2011 onwards (Figure 8), with the city becoming the leading recipient globally of Peru’s CITES exports.  

**The USA** has been a key supplier of reptile species, with Hong Kong receiving over 638,300 animals from 98 species. Alligator snapping turtles (Macrochelys temminckii), African spurred tortoises (Centrochelys sulcata), Common snapping turtles (Chelydra serpentina) and Common green iguanas (Iguana iguana) – all species that grow to be large and are long-lived (Section 5.3) – were most abundant.

Other major exporters have ebbed and flowed in terms of the volumes of exotics sent to Hong Kong over time (Figure 8).

**Malaysia** dominated the trade in the early 2000s, accounting for as much as 90% of annual imports in 2003. Asian water monitors (Varanus salvator) were the main export, with 148,300 arriving in Hong Kong between 2000 and 2013.

**El Salvador’s** supply of Common green iguanas (92% of the exotics received from El Salvador) rose to prominence, starting in 2011. More than 255,100 had been imported by 2019.

**Indonesia** dominated exports of Ambon box turtles (Cuora amboinensis) peaking between 2006 and 2012. Approximately 106,400 were imported over the last two decades, with over 19,500 arriving in 2006 alone.

**Zambia’s** Leopard tortoise (Stigmochelys pardalis) exports to Hong Kong surpassed 10,000 animals per year starting in 2011 and 130,800 had been imported by 2019.
Figure 7
CITES Imports by Exporting Country and Species (2000-2019)
Data Source: CITES Trade Database (2021); AFCD CITES Trade Statistics (2021)

(a) Reptile Imports
- Peru
- United States of America
- El Salvador
- Malaysia
- Indonesia
- Ghana
- Brazil
- North Macedonia
- Mali
- China
- Czech Republic
- Other Countries

(b) Other Live Exotic Imports
(Birds, Arthropods, Amphibians and Mammals)
- Peru
- United States of America
- Malaysia
- Indonesia
- Ghana
- Brazil
- North Macedonia
- Mali
- China
- Czech Republic
- Other Countries

Figure 8
Number of CITES-regulated Animals Imported for Commercial Purposes from Major Exporting Countries (2000-2019)
Data Source: CITES Trade Database (2021); AFCD CITES Trade Statistics (2021)
The local trade in cobra species is worth examining in greater detail, as it raises a series of regulatory questions.

According to AFCD’s Codes of Standards (CoS) (Part II: Section 3.5), “Trade in poisonous/venomous or dangerous animals/birds is not permitted and such animals or birds must not be kept in the licensed premises.” However, licensed Food Reptile Traders may trade up to five species/families of venomous snakes, including two species of cobra, two species of kraits and any species of sea snake (Hydrophiidae spp.). As such, the only locations in Hong Kong where cobras may be kept are licensed food premises where the only permitted use is for food (e.g., snake soup).

No cobras from either of the permitted species – Indian cobras (Naja naja) and King cobras (Ophiophagus hannah) – have been imported according to government data since 2011 (noting that between 2000 and 2011 31,000 were imported). The continued presence of venomous species in trader premises suggests that these animals are not being kept exclusively for food, and raises a number of questions about sourcing, health, safety and welfare.

Cobras may live as long as 20 years in the wild and longer in captivity. As such, those present in shops may well be those imported in the batches up to 2011 if this is the case, even though the snakes were acquired for food, they have been kept for a longer period than might be expected for such sales (note there is no stipulated maximum period for which the food reptile can be kept in premises, which is a potential welfare concern). Under Cap. 586 (see Part II: Section 4), wild-caught cobras (such as many of those imported) must be kept in accordance with a Possession License (PL) which can be renewed (Part II: Section 4.3) once the 5-year validity period expires.

Sourcing
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Health and safety
Without regular testing of cobras in trader premises for parasites, bacteria and viruses, it is unclear what the potential risk to consumers might be, since the animals are supposed to be for food. The keeping conditions for cobras are not well documented. However, they have been reported and observed to be housed in wooden drawers during the day and, whilst these may not be permanent, prolonged keeping of live animals in such conditions (dark, damp, limited ventilation, etc.) increases the likelihood of pathogens breeding and deterioration of the animal’s health (Section 5.3). This also poses potential health risk to handlers and consumers (Section 6).

According to the AFCD, there are no restrictions on the breeding of food reptiles in licensed trader premises. As venomous species, cobras pose a level of threat to public safety, unless well-managed. The risks of long-term keeping appear, however, to be tolerated for the purposes of a non-essential food trade.

There are, however, other possible sources. The snakes could have been bred, but local experts believe this is unlikely given the expense of such an operation, chiefly feeding them to maturity. Alternatively, local snake catchers are well-documented capturing cobras, some even appear to openly operate trading premises raising concerns that local cobras are being poached for consumption.

A third possible source is from cobras farmed and captured outside of Hong Kong and being trafficked into the city. All Indian cobras imported in the last two decades arrived from either Indonesia (2000-2001) or Malaysia (2001-2011). All Malaysian individuals were indicated as “Wild” origin, despite there being no known endemic population of the species there. This discrepancy raises concerns that species have been misdeclared in CITES permitting and other declarations and were actually other species of the Naja genus which are not permitted for local trade.

Food snake traders have also publicly acknowledged and have been observed keeping other venomous species, such as the Chinese cobra (Naja atra), other Naja species and Bamboo pit vipers (Trimeresurus stejnegeri). These other venomous species are not permitted under trader license conditions, raising further questions about oversight of venomous species in trade.

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The conditions of some trader premises would appear to be in breach of the Code of Standards for Licensed Animal traders and that animals ostensibly captured or imported for the food trade are being stored within unsuitable enclosures for multiple years indicating they are not for food, without sufficient consideration of husbandry requirements. Traders have admitted to defanging their animals with clamps, raising significant concerns about their welfare.

Concerns for the wellbeing of food reptiles are amplified by their exemption from slaughter regulations, indicating there is little, if any, oversight over the means used to kill cobras for consumption.

As of October 2021, there were 16 animal traders permitted to sell venomous snakes.

Welfare

The Cobra Question

3.3 Focusing on CITES and non-CITES Pet Exotics (2015-2019)

Unlike the C&SD data (Section 3.1), there is no indication of the end use within AFCD and CITES datasets. The extent of the information provided for CITES imports is that they were destined for “Commercial” trade (Sections 2.3 & 2.4). Even less information is gathered for non-CITES species (Section 2.4). Nevertheless, according to these datasets combined, a total of 4.5 million live exotics were imported from 2015 to 2019 for commercial purposes and are thus assumed to be mostly pets (Figure 9 & 10). Notably, this is considerably higher than the 3.6 million indicated by C&SD data in Section 3.1 above. As noted, the difference is potentially the result of imports, re-exports and exports not being declared or being mis-declared.

Including both CITES and non-CITES data, the majority of imports were reptiles (83%), with smaller but significant quantities of various marine invertebrates (mainly coral) (5%), fish (5%), birds (4%) and mammals (3%).

Although fish and other aquatic taxa, including Asian arowanas, corals, clams and seahorses, have not been included in the data analysis, the trade of aquaria species is noted to be significant and should be the subject of a separate detailed review.

According to AFCD figures, this then leaves 4 million exotic animals amounting to 705 species imported (most likely) for the pet trade for the years 2015-2019 (Figure 10).
Figure 9
Hong Kong Imports of Live Exotic Animals (2015-2019), Indicating CITES Appendices and Taxonomic Group
Data Source: AFCD CITES & non-CITES Trade Statistics (2021)

Figure 10
Categorisations and Volumes of Exotic Animals Imported, Based on AFCD Datasets (2015-2019)
Data Source: AFCD CITES & non-CITES Trade Statistics (2021)

Exotics
4,494,627 animals | 855 species*

CITES & Non-CITES Pet & Aquaria Exotics
4,296,641 animals | 847 species

Pet Exotics Analysed
4 million animals 705 species

CITES Exotics
3,004,376 animals | 367 species*

CITES Pet Exotics
2,810,376 animals | 226 species*
(Excl. Aquaria)

CITES Aquaria Exotics
254,002 animals | 142 species*

Non-CITES Pet Exotics
1,232,263 animals | 480 species*

Non-pet (food) Exotics
197,986 fish
8 species

* where species or subspecies was indicated

4.5 million Live Exotics
(2015-2019)

3,064,378 animals | 367 species*

CITES Exotics
254,002 animals | 142 species*

CITES Aquaria Exotics
2,810,376 animals | 225 species*

CITES Pet Exotics
1,232,263 animals | 480 species*

Non-CITES Pet Exotics
705 species

4 million animals
(Excl. Aquaria)
Over two-thirds of the 4 million exotics, comprising 225 species, imported were listed under CITES and are thus scheduled species in Hong Kong. The import and export/re-export of such species must meet specific permit and licensing requirements (Part II: Section 4).

More than 343,100 were imported annually, with as many as 792,800 arriving in the peak year of 2016. Reptiles consistently made up over 97% of annual imports, drawn from 149 species with as many as 784,300 arriving in a single year (2016) (Figure 11a). All other taxa were imported in smaller quantities (Figure 11b-d).

**Figure 11**
Number of CITES-regulated Animals of Each Broad Taxonomy Imported into Hong Kong (2015-2019)

Data Source: AFCD CITES Trade Statistics (2023)

Large numbers of non-CITES animals were also imported for the exotic pet trade, amounting to 1.2 million from 480 species from 2015 through 2019.

As with CITES-regulated species, reptiles made up the majority, with 951,100 animals from 420 species imported, making the trade in non-CITES reptiles nearly twice as diverse as the CITES-regulated trade. An additional 157,700 birds from 54 species and 123,500 mammals from just seven species were also brought into the city.

Data is not collected by the AFCD for non-CITES amphibians, yet C&SD data demonstrates that they are abundant (Section 3.1). As such, their trade is poorly understood (Box 4).

**Box 4**
Hong Kong's Amphibian Trade

Hong Kong's amphibian trade is not well documented. AFCD maintains records only for CITES-regulated species and C&SD documents only live frogs (most likely destined for the food trade). Non-CITES amphibians are particularly poorly documented in local and global trades, if at all.

Hong Kong has been characterised as a transit hub for the trade in certain amphibians (e.g., salamanders), yet there is next to no official data available. This is concerning since despite at least 17% (n=1,215) of known amphibian species being in trade and more than one-in-five threatened with extinction, only 2.4% of species are afforded limited protections under CITES.19 Records from the AFCD indicate nearly 7,300 CITES-regulated amphibians arrived in the city from 2015 to 2019. The 18.8 million frogs imported into Hong Kong are suspected to be dominated by bullfrogs, most likely imported for food (Section 3.1) and some for mercy releases (Section 4.4.3). Few appear to have been legally re-exported however, and it is unclear what the scale of the local market is.
2015-2019 CITES Species
Data Source: AFCD-CITES Trade Statistics (2021)

2.8 million
Reptiles
149 species

- 33,800 Snakes | 4 species
- 200,800 Lizards | 68 species

Lizards
- 127,500 Common Green Iguanas
- 49,300 Chameleons | 36 species
- 6,500 Geckos | 15 species
- 17,500 Other Lizards | 16 species

- 14,200 Birds
- 68 species

- Over 2.5 million Turtles & tortoises
- 77 species

- 77 species

- 200,800 Lizards | 68 species

- 127,500 Common Green Iguanas

- 49,300 Chameleons | 36 species

- 6,500 Geckos | 15 species

- 17,500 Other Lizards | 16 species

- 14,200 Birds

- 68 species

- Over 2.5 million Turtles & tortoises

- 77 species

- 33,800 Snakes | 4 species

- 200,800 Lizards | 68 species

Snakes
- 33,800 Snakes | 4 species

Turtles & tortoises
- Over 2.5 million Turtles & tortoises

- 77 species

Arthropods
- 10,800 mostly Emperor scorpions

- 100 Tarantulas | 4 species

Amphibians
- 7,271 mostly Red-eyed Treefrogs

Parrots, Parakeets, Parrotlets, etc.
- 66 species

Psittaciformes

The majority were
Birds

Mixed

Figure 12

Numbers of Animal Trading Licenses Valid for Various Taxa in Hong Kong as of May 2020

Data Source: ISD (2020) Licenses: Trading of animals

3.4.1 Animal Trader Licenses

In order to sell exotic pets in Hong Kong commercially, a trader is required to obtain an Animal Trader License (ATL) (see Part II: Section 3.5). As of May 2020, there were 179 ATL licenses permitting the trade of small mammals, reptiles, birds or a mixture of the three (Figure 12). However, these covered both pet shops and food animal traders, though the majority are believed to be the former, noting that as of July 2021, according to AFCD, there were at least 140 Licensed Pet Shops (variously trading dogs, cats and exotic species).

Nevertheless, the dynamics of the local trade remain challenging to ascertain, with very limited data publicly available on the volumes of animals sold or the species.

This is particularly problematic where non-CITES species are concerned, as there are no record-keeping requirements for trades, transfers, deaths or births of any non-CITES small mammal, reptile or amphibian species. An ATL is only required to trade reptiles, birds and small mammals, meaning that animals such as amphibians, fish and invertebrates can be legally traded without an ATL.

3.4.2 Domestic Market Dynamics

Whilst data on imports and re-exports/exports of exotics can be ascertained (noting the limitations of that data highlighted in Section 2 above), trade dynamics cannot usefully be drawn from such figures alone. Information needed to draw an accurate as possible picture of the local market and its trends, however, is limited.

While studies published on market dynamics are few and far between, and typically taxa-specific, the following provides some insights. Birds, notably, were the only taxonomic group for which sales information was broadly available (see also below for insights from 2017-2019), although it remains unclear how many species were sold locally.

Hong Kong’s Historic Animal Trade

Ecologists described elements of Hong Kong wildlife markets as early as the 1960s. However, there have been few efforts to holistically analyse the trade’s composition and dynamics.

The Conservancy Association (CA) was among the first to publish early observations. It found a largely unregulated market and characterised imports as “unrestricted and uncontrolled”. With the establishment of CITES, new laws in Hong Kong mandated that the largest importers of birds and mammals register and report their trade in CITES-listed species from 1973 onwards. However, the CA believed the trader-reported figures to be “unreliable”, based on their observations of the local market and cross-comparisons with import data. They and other conservation-focused organisations raised concerns on multiple occasions about the nature, scale and impact of Hong Kong’s trade in live animals, particularly around the bird trade, which they believed was likely “doing a great deal of damage to the ecological systems of South China”.

In subsequent decades, NGOs have continued to express concerns over the variety of trade records reported to the Hong Kong government. The Hong Kong Bird Watching Society (HKBWS), TRAFFIC, Kadodorie Farm & Botanic Garden (KFBG), local academics (including Dr. Caroline Dingle at HKU, Dr. Rebecca Wong of City University), and Dr. Sung Yik Hei of Lingnan University, as well as government personnel, have repeatedly attempted to characterise the local market, conducting market surveys and analysing import and re-export/export records to determine the dynamics of the trade. Often, their work has focused on specific taxonomic groups, most commonly birds and reptiles, providing snapshots of the situation over brief (two to three year) periods. Nevertheless, it is clear that the nature, scale and diversity of the trade has evolved considerably.

Between the 1970s and the 1990s, Hong Kong’s trade in live exotics comprised a wide array of pet or song birds as well as many species of mammals and birds for consumption (cuisine and TCM) imported from Mainland China.

Through the 1990s and into the 2000s, the scale of the pet trade grew and diversified substantially, evolving to comprise a vast range of bird and reptile species, with less significant trade in mammals and amphibians. Researchers at KFBG estimated that by the mid-1990s at any given time as many as 5,579 live birds were available in the pet shops on Bird Street, and 462 amphibians and 845 reptiles in Tung Choi Street.

In some years, over a million birds have been imported, including wild birds for the trade in pets (e.g., songbirds or Passerines), food (e.g., Galliformes species) and TCM (e.g., birds of prey). By the mid-2000s, research from HKU estimated that an average of 12,100 live birds were held in domestic markets at any one time. Some species, such as the Red-billed blue magpie (Urocissa erythrorhyncha), have managed to survive the onslaught of the trade for over 150 years. Others, like the African grey parrot (Psittacus erithacus), have been less fortunate, with the demand in Hong Kong contributing to population declines across their home ranges.

By 2018-19, research led by Dr. Caroline Dingle of HKU indicated an average of around 1,300 birds (up to 1,700) were on sale in Bird Street at any one time—a marked reduction. Notably, market observations are limited to store fronts and retail areas, while more birds may be kept in warehouses, back rooms and breeding facilities which are challenging to gain access to.

Bird Trade (2017-2019)

AFCD received records from 21 licensed bird traders for the sale of nearly 86,100 birds locally from 2017 to 2019 (Figure 12). In this period, around 85,700 birds were sold in domestic markets (AFCD-regulated and non-CITES) were imported. The similarity of these numbers may suggest that the majority of the birds that arrived were sold within Hong Kong, though it remains unclear how many birds were hatched, died or remained from previous years at licensed premises. The birds imported were from around 86 species (including hybrids), though two songbird species dominated—White-rumped seedeater (Crithagra leucopygialis) and Yellow-fronted canary (Crithagra mozambica).

In just 2018 and 2019, however, surveys of local markets conducted by HKU researchers indicated as many as 227 species of birds for sale. The disparity suggests many more species may be landed in Hong Kong than are declared.

The AFCD has indicated that nine species are particularly common in the local trade (as of 2021), namely species of cockatoos, canaries, budgerigars, munias, finches, hawelis, white-eyes and magpie-robins. However, CITES and AFCD data do not show any imports of several of these species in recent years. For instance, since its listing under CITES in 2000, there are no records of Chinese hawelis imports, despite it being among those AFCD commonly observed in trade. Conversely, despite being imported in far higher volumes, it is surprising that White-rumped seedeaters and Yellow-fronted canaries are not commonly seen in domestic markets.
3.5 Online Trade Plays an Increasing Role in the Trade

With the continuous rise of online retail/e-commerce, exotic pets have been increasingly traded online, where monitoring and enforcement remain challenging. The AFCD acknowledged the online trade as being an issue as early as 2009 and has prosecuted several individuals for illegally trading wildlife through online platforms (see Part II: Section 7.2).

Local studies of the online trade of wildlife began in the 2010s, focusing on hobbyist forums. Researchers from Lingnan University found that one-third of all turtle species (106 out of 365) were present in Hong Kong’s online trade from 2013-2016, including 24 Critically Endangered species. They observed 14,360 live turtles being advertised for sale in over 9,000 posts. The majority of species were Asian and North American.

Subsequent research by the City University of Hong Kong, monitored the local online trade in turtles and tortoises in 2016 and 2017. They focused on what was, at the time, the largest local forum/discussion board dedicated to pet keeping and trade – Pet Trade HK – observing that animals were advertised for sale by users (including PPOs) on a daily basis, of which 80% were from CITES-regulated species. At minimum, 4,445 live turtles and tortoises were advertised for sale over the study period, including Radiated tortoises (Astrochelys radiata), Black pond turtles (Geoclemys hamiltonii) and Chinese big-headed turtles (Platysternon megacephalum) – all CITES Appendix I species.

In 2021, Lingnan University researchers published updated insights from a 12-month study (July 2017 - June 2018) on the use of social media and forums to trade live turtles and tortoises in Hong Kong. They concluded that the low barrier to entry in the trade had provided a pathway for amateurs to participate in the illegal trade. The team documented approximately 500 social media profiles and a further 200 forum users advertising the sale of turtles over the period, indicating that many individuals were engaging in the local online trade at the time. Notably, the number of online sellers appears to have been far greater than the number of licensed reptile trading premises operating in Hong Kong at the time (44 in 2017 and 48 in 2018). Regulatory enforcement of the booming online wildlife trade remains a challenge (Box 5) and lawmakers have called for more actions against the selling of animals online.

Non-CITES Birds Imported
CITES Birds Imported
Birds Sold by ATLs

Monitoring by researchers at Lingnan University reveals Hong Kong-based web users are active in selling turtles and tortoises through Facebook. Among hundreds of posts reviewed, several profiles offered endangered species for sale for which local records do not show any legal imports.

According to the CITES Trade Database, there are no records of Black pond turtles or Ryukyu black-breasted leaf turtle (Clemmys japonica) being imported by Hong Kong traders since 1978. Whilst there is evidence of these species being bred locally, their provenance is largely unknown. The majority of Black pond turtles and Ryukyu black-breasted leaf turtles in Hong Kong have been discovered in illegal shipments or were possessed illegally by PPOs.

Whilst it is unclear what the true scale of the online trade is in Hong Kong, a review by ADMCF in 2021 found that 83% of ATL holders listed by the AFCD use social media (particularly Facebook and Instagram) to sell live exotic species. Such use of Facebook, Instagram and WhatsApp accounts is explicitly banned by Facebook (Box 6).

In 2018, Facebook joined the Coalition to End Wildlife Trafficking Online, pledging with 21 major tech firms (now 47) to reduce wildlife trafficking across their platforms by 80% by 2020. By March 2020, the coalition claimed to have removed over 3.3 million listings including 4,500 wildlife products and as of September 2021 they had removed as many as 116 million. However, these posts are a fraction of the illegal commerce taking place on these platforms, which have over 11 billion user accounts worldwide.

A review of Meta Platforms, Inc’s (formerly Facebook Inc.) policies for both individual and commercial profiles revealed that exotic animal trades should not be taking place through Facebook, WhatsApp or Instagram (Part II: Section 7.2). Yet, watchdog organisations have repeatedly found the platform failing to enforce its policies or act swiftly in response to issues raised by observers. The Alliance to Counter Crime Online (ACCO) assessed Facebook and found it to be failing on numerous fronts, stating that “Facebook policy and public comments about countering illicit content are rendered virtually meaningless by the firm’s ineffective follow up and enforcement.”
4 Environmental and Conservation Concerns

4.1 Threatened Species in Trade

With hundreds of thousands of animals (CITES & non-CITES) arriving in the city annually to supply the exotic pet trade, the environmental sustainability of trade is a major concern. The International Union for the Conservation of Nature (IUCN) estimated that a fifth of the bird, mammal, reptile and amphibian species assessed by 2021 were likely threatened with extinction. Among these, amphibians were at particular risk, with 41% of assessed species considered to be threatened.

While the majority of exotics in trade in Hong Kong are CITES-regulated, which provides some degree of governance and oversight, there are weaknesses in the implementing regulations (see Part II: Section 4) and live exotic seizures are persistent. Although the non-CITES animals in trade are fewer in number, species diversity is high and conservation concerns persist.

Over half (52%) of the exotic animals (both CITES & non-CITES species) imported over the last five years were from threatened species - meaning that these animals are facing the threat of extinction in the wild as determined by the IUCN (Figure 14 and Table 2).

CITES Of the 2.8 million animals traded under CITES regulations from 2015-2019 (Section 3.3), the majority (72%) were threatened with extinction (i.e., Critically Endangered, Endangered and Vulnerable) (Figure 14). Hong Kong traders imported over 166,400 live animals from 39 species considered to be facing “very high” and “extremely high” risk of extinction in the wild. Turtle and tortoise species made up the majority of these imports.

Two-thirds of CITES-regulated animals imported were ‘Vulnerable’. Of these, the majority were ranched Yellow-spotted river turtles, hatched and reared from wild-harvested eggs from regions where wild populations have not been assessed since 1996 and where key operations supplying Hong Kong have been linked to problematic practices (Box 15).

Of the over half a million live exotics classed as ‘Least Concern’ (Figure 14), nearly two-thirds were from populations whose status is unknown. Even where the population was indicated by the IUCN as ‘Stable’, the majority (69%) had not been assessed within the last decade — a period which has seen the global trade in wildlife rise dramatically in volume and diversity

Among the 2.8 million CITES animal imports, just 0.03% were drawn from species whose populations have been increasing, and only 7% were from stable populations. The status of the remainder is either in decline (10%) or unclear (83%), which includes populations that were “unspecified”, “unknown” and “not evaluated”, highlighting the urgent need for more research.
Table 2

IUCN Red List Categories and Definitions

<table>
<thead>
<tr>
<th>Code</th>
<th>IUCN Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>Critically Endangered</td>
<td>Facing an extremely high risk of extinction in the wild.</td>
</tr>
<tr>
<td>EN</td>
<td>Endangered</td>
<td>Facing a very high risk of extinction in the wild.</td>
</tr>
<tr>
<td>VU</td>
<td>Vulnerable</td>
<td>Facing a high risk of extinction in the wild.</td>
</tr>
<tr>
<td>NT</td>
<td>Near Threatened</td>
<td>Close to qualifying for or is likely to qualify for a threatened category in the near future.</td>
</tr>
<tr>
<td>LC</td>
<td>Least Concern</td>
<td>Does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened.</td>
</tr>
<tr>
<td>DD</td>
<td>Data Deficient</td>
<td>Inadequate information available to make a direct or indirect assessment.</td>
</tr>
<tr>
<td>NE</td>
<td>Not Evaluated</td>
<td>Used where the species has not been assessed by the IUCN.</td>
</tr>
<tr>
<td>UK</td>
<td>Unknown</td>
<td>Used where none of the other categories could be applied, largely comprising hybrid species and subspecies.</td>
</tr>
</tbody>
</table>

Note: The classification of 'Threatened species' refers to Critically Endangered, Endangered and Vulnerable.

Non-CITES

Of the 12 million non-CITES animals in trade at least 84,300 were drawn from threatened species. However, 673,200 animals were drawn from species whose wild populations are in a state of decline or whose conservation status remains unknown. The limited information on the state of these populations raises concerns about the sustainability of the species’ trade. As a precautionary note, there are numerous examples of local populations and even entire species being traded to extinction before scientists have been able to study them (Section 4.3). The status of non-CITES species is further complicated by the lack of information on their source (Part II: Section 3.4), making it impossible to determine the impact the trade may be having on the species and whether these animals are being poached, harvested unsustainably or bred in captivity.

The trade in non-CITES lizard species is of particular concern. Nearly a quarter of the 279,400 lizards imported by Hong Kong traders from 2015 to 2019 were drawn from threatened species, whose wild populations are almost all in decline.

4.2 Trading the World’s Most Endangered Tortoises and Turtles

A Troubling Trade

Studies from Lingnan University identified over one-third of all turtle and tortoise species (136 out of the 365 known species) as being in Hong Kong’s trade as of the mid-2010s(1). In 2018(2), researchers from the Turtle Conservation Coalition – a partnership of leading global turtle conservation organisations– identified over 25 species of turtles and tortoises at imminent risk of extinction. At least 13 of these Critically Endangered species have been imported into Hong Kong, amounting to 7,900 individuals between 2015 and 2019 (Table 3). All 13 species are (at the time of this report) included under CITES, with some having been listed since the inception of the Convention in 1979.

Once these Critically Endangered animals have been purchased, they cannot disappear from government scrutiny, since PPOs are not required to have licenses to possess, unlike traders (Part II: Section 5). This limited traceability hinders enforcement of legislation and oversight, potentially allowing for breeding without controls, raising concerns about welfare (Section 5) as well as potential trafficking to other jurisdictions (Part II: Section 7).

Almost 2,200 individuals were re-exported. The only exports were of twenty-five Golden coin turtles (Cuora trifasciata), suggesting that there are no substantial local breeding programmes supplying international demand for these Critical Endangered species.

As with other taxa such as birds and amphibians, concerns about the environment, unsustainable harvesting practices in home ranges, laundering and illegal sales continue to be major threats, as demonstrated by the subsequent case studies (Boxes 7-9).

Table 3

Key Data on Critically Endangered Turtle and Tortoise Species Traded in Hong Kong (2015-2019)

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species</th>
<th>CITES Appendix (Date Added)</th>
<th>Import Total (2015-2019)</th>
<th>Re-export Total (2015-2019)</th>
<th>Longevity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancake Tortoise</td>
<td>Malacochersus tonsieri</td>
<td>I (2019), formerly II (1975)</td>
<td>5,479</td>
<td>1,993</td>
<td>&gt;35 years</td>
</tr>
<tr>
<td>Annam Pond Turtle</td>
<td>Mauremys annamensis</td>
<td>I (2019)</td>
<td>1503</td>
<td>-</td>
<td>&lt;30 years</td>
</tr>
<tr>
<td>Painted Terrapin</td>
<td>Batagur borneoensis</td>
<td>II (1997)</td>
<td>279</td>
<td>150</td>
<td>30-50 years</td>
</tr>
<tr>
<td>McCord’s Box Turtle</td>
<td>Cuora mccordi</td>
<td>II (2019)*</td>
<td>201</td>
<td>-</td>
<td>50-100 years</td>
</tr>
<tr>
<td>Golden coin turtle</td>
<td>Cuora trifasciata</td>
<td>II (2000)*</td>
<td>169</td>
<td>36</td>
<td>&lt;30 years</td>
</tr>
<tr>
<td>Pan’s Box Turtle</td>
<td>Cuora pani</td>
<td>II (2019)*</td>
<td>88</td>
<td>-</td>
<td>&lt;30 years</td>
</tr>
<tr>
<td>Madagascar Big-headed Turtle</td>
<td>Erymnochelys madagascariensis</td>
<td>II (1976)</td>
<td>85</td>
<td>-</td>
<td>&lt;25 years</td>
</tr>
<tr>
<td>Golden-headed Box turtle</td>
<td>Cuora ariocapitata</td>
<td>II (2019)*</td>
<td>46</td>
<td>-</td>
<td>&lt;40 years</td>
</tr>
<tr>
<td>Rot Island Snake-necked Turtle</td>
<td>Chelodina mccordi</td>
<td>II (2006)*</td>
<td>24</td>
<td>-</td>
<td>50-100 years</td>
</tr>
<tr>
<td>Radiated Tortoise</td>
<td>Astrochelys radiata</td>
<td>II (1976)</td>
<td>19</td>
<td>4</td>
<td>60-80 years</td>
</tr>
<tr>
<td>Central American River Turtle</td>
<td>Dermatemys mawii</td>
<td>II (1983)</td>
<td>18</td>
<td>-</td>
<td>&lt;40 years</td>
</tr>
<tr>
<td>Zhou’s Box Turtle</td>
<td>Cuora zhui</td>
<td>II (2000)*</td>
<td>3</td>
<td>3</td>
<td>&lt;50 years</td>
</tr>
<tr>
<td>Indochinese Box Turtle</td>
<td>Cuora galbinifrons</td>
<td>II (2000)*</td>
<td>2</td>
<td>10</td>
<td>&lt;100 years</td>
</tr>
</tbody>
</table>

Note: * denotes species for which there is a zero quota for the commercial trade in wild-caught individuals.
- denotes zero values.
Over two-thirds of the Critically Endangered turtles and tortoises imported into Hong Kong were Pancake tortoises. The species is considered to be at extremely high risk of extinction in the wild, with populations pressured by overexploitation, climate change and habitat destruction. Hong Kong traders imported the tortoises predominantly from their native Zambia and Tanzania. Whilst most are purportedly farmed, local and international conservationists have raised serious concerns about wild individuals being laundered through captive-breeding facilities within their home ranges.

Nearly 5,200 individuals were exported from Zambia to Hong Kong between 2015-2019, purportedly captive-bred or farmed. However, there is no public information on any breeding facilities in Zambia. Further, local populations are small and slow to mature, with females of the species reaching sexual maturity at 5-9 years of age and typically laying one egg per clutch. It has therefore been posited that most animals have entered the trade after being poached from neighbouring regions. Since the Zambian government has only been able to establish that around 500 animals are present in the country, it is believed most were harvested and trafficked from Tanzania, which has strict quotas in place and banned all exports of wild-taken individuals in 2019.

According to CITES trade data, Hong Kong has been the leading destination for the species in recent years, receiving nearly a third of all individuals internationally traded from 2015-2019. The species was brought under the stricter regulations of Appendix I in November 2019 and there are currently no CITES-registered operations for breeding or rearing the species.

The Vietnamese or Annam pond turtle has been listed on the IUCN Red List as Critically Endangered since 2000. By 2018, it was assessed to be “functionally extinct in the wild”, with fewer than 50 mature individuals believed to be remaining. Their falling numbers have been partially attributed to overexploitation, with captive-breeding programmes in Vietnam and Mainland China alleged to be poaching wild individuals to become breeding stock.

CITES has recorded only “modest numbers” being reared through a limited number of breeding programmes across Vietnam, Europe, the USA and Hong Kong, noting that most breeders claim to be focused on conservation. Females reach sexual maturity at 5-7 years old and typically lay clutches of just 1-4 eggs per year, limiting the scalability of breeding operations.

Hong Kong was indicted as the destination market for 78% of global exports from 2015-2019, according to CITES trade data. Local traders imported around 1,500 individuals from 2015-2019, most from the USA for commercial purposes.
The African spurred tortoise is an Endangered species, native to the Sahel and Sudanese regions of Africa. Their populations in the wild are decreasing and fragmented, because of pressure from livestock farming, wildfires and the global pet trade.

Hong Kong has dominated global demand for the species in recent years, being indicated as the destination market in 45% of global exports from 2015 through 2019 recorded in the CITES database.

Local traders imported 112,700 of the species over this period, making the African spurred tortoise the most popular Endangered species, out of the 154,100 Endangered animals in trade locally.

The majority (45%) of African spurred tortoises that arrived in Hong Kong originated from the USA, with over 51,200 imported between 2015 and 2019. Assessments in the early 2000s indicated that the population in the USA exceeded the entire wild population in Africa, at that time. Whilst trade of the species from the USA has not been broadly linked to laundering, several other source nations have been flagged for concern by conservationists.

Togo, for instance, was the leading source of Hong Kong’s African spurred tortoise imports in 2019, despite there being no apparent local population (the country’s once endemic population is believed to have been driven into extinction). In 2018 and 2019, Togo had CITES export quotas of 700 and 1,500 individuals respectively (totalling 2,200). Hong Kong imported more than 2,500 in the same two-year period.

While Togo has developed farming programmes, these have reportedly relied on influxes of new breeding stocks from neighbouring Mali and Niger, where populations are in decline.

Limited regulation may lead to species being traded to extinction, even before they become well known to scientists. Multiple species, including the Cuban macaw, Paradise parrot and Pass stubfoot toad, have had their entire wild populations wiped out due to a combination of anthropogenic pressures, not least collection for the pet trade. Countries with highly sought-after species at increasing risk of poaching, such as Madagascar, are at particular risk of losing many endemic species.

Researchers, in 2018, found that nearly a third of 958 threatened species traded internationally fell outside of CITES regulations. They also observed that once a species was identified as threatened it would, on average, be brought under CITES within a decade in an effort to protect the species.

The plight of non-CITES animals is demonstrated through the trade of reptiles. Researchers have estimated that more than a third of reptile species are traded online with three-quarters of the traded species not internationally regulated and 90% known to be captured in the wild. Few jurisdictions maintain records of the trade in non-CITES species. Fortunately, Hong Kong is among the exceptions, allowing for an assessment of the hundreds of non-CITES exotic species in the local trade. Such analysis is essential, since limited protection or oversight may leave these species vulnerable to overexploitation. In Hong Kong, 420 of the 569 species of reptiles imported for the pet trade were non-CITES listed. While their country of export is recorded, little else is. For instance, there is no data on how many of these animals have been harvested from the wild.

Regulations are required to ensure that species imported into Hong Kong for trade have not be harvested or traded in breach of local laws, as was the practice historically (Part II: Section 7.4.2). Examples of species traded in Hong Kong that have suffered from the extreme pressures of overharvesting in their home regions include the Turquoise dwarf gecko, Chinese water dragons and Caspian turtles (Boxes 10-12).
The Turquoise dwarf gecko is a vibrantly-coloured species prized by herpetology hobbyists around the world. However, it has faced extreme pressures from collectors. As much as 15% of their population were harvested between 2004 and 2009. The species was listed under CITES Appendix I in 2017. As a hyperspecialized species – residing only on a single species of plant – the entire wild population inhabits a single 20km² patch of forest in the Uluguru Mountains of eastern Tanzania. Following a period during which an estimated 1,800 geckos were extracted from the area each day, scientists began to call for the species to be included under CITES, as the species was confirmed as being Critically Endangered around 2012. Collection and export of the species has never been permitted by Tanzanian authorities. However, due to the delay of the official CITES listing, illegal trade continued to proliferate for many years.

In light of the above, Hong Kong’s receipt of 300 individuals directly from Tanzania in 2015 raises concerns about the legality of such imports (Part II: Section 7.4).

The Caspian turtle is a species endemic to the eastern Mediterranean and the Middle East. Whilst there is limited information on its conservation status, at least 7,357 individuals were imported into Hong Kong between 2015 and 2019, the majority from the Syrian Arabic Republic (hereafter Syria). This trade raises some concern, as Syria has been in a state of civil war for the past decade and has a poor record in the trade of reptiles. Local researchers have observed that reptiles in trade in the country are often housed in “improper conditions” and that the illegal trade in turtles is rampant with no data on imports or exports and no protected areas or conservation. These concerns, coupled with landscape alteration, pollution and intensification of water usage across many parts of the species home range increasingly threaten their survival.
4.4 Alien and Invasive Species

4.4.1 Introduction

Hong Kong has a long history of alien species (i.e., non-native) invading and thriving in local habitats. Some of the Territory’s iconic and abundant species are actually non-native, exotic species. The familiar Sulphur-crested and Yellow-crested cockatoos were released in Hong Kong in the 1940s. Long-tailed macaques were either released or escaped captivity shortly after WWll and have since interbred with endemic Rhesus macaques. Red-eared sliders were first released or abandoned in the 1980s (Box 13) during a pet ownership craze inspired by the Teenage Mutant Ninja Turtles cartoons.

To date, few alien animal species have been positively identified as posing a significant threat to local biodiversity. However, considering the species richness and the volume of animals distributed across the city’s traders and in private pet owners’ hands, it is likely only a matter of time before an invasive species enters the local ecosystem to the detriment of endemic and locally established species. This may result in outcompeting, predating, interbreeding or passing along harmful pathogens (Section 6.2). A study on global extinctions since 1500 A.D. found a third of animal species studied had been wiped out by invasive alien species through competition, disease transmission and predation.

As many as 125 bird, 23 fish, 19 reptile, eight mammal, four amphibian and two marine invertebrate species, alien to Hong Kong, have been introduced into the local environment over the last century, yet it is likely that many more have been introduced but have been unable to adapt or survive.

Whilst legislators and the government have raised concerns about invasive species and acknowledged the potential risk in the city’s Biodiversity Strategy and Action Plan (BSAP), more data and research are necessary to more effectively manage illegal trade, etc. Consultants commissioned by the Hong Kong government to develop a “Risk Assessment Protocol” to identify “Invasive Alien Species” (IAS) found a paucity of information on alien species in Hong Kong even in cases where management plans have been implemented and that the approaches needed to be reviewed.

4.4.2 Abandonment

One source of wildlife entering the local environment in Hong Kong is through abandonment. This practice poses a threat to the animals’ welfare and potentially to local ecosystems. Between 2015 and 2019, 6,952 stray small mammals, reptiles and birds (classified as “Other animals”) were caught by the AFCD, but only a fraction were legally imported from six countries.

Despite AFCD’s longstanding view – that Red-eared sliders are driving declines in rare local species – the species have only been allowed to persist in the local trade for decades. From 2015-2019, more than 60,200 Red-eared sliders were legally imported from six countries.

Fundamentally, the limited understanding of the significance of the slider in driving local declines and being largely exempted from any local controls to prevent them from outcompeting local species needs to be addressed.

4.4.3 Mercy Releases

So-called mercy releases have been practised in Hong Kong since at least the 1940s. Fundamentally, such releases are motivated as a means of gaining good karma. By releasing captive animals into the wild, Buddhist and Taoist practitioners believe they can bring fortune, longevity, happiness, health, absolution for sins and other benefits.

Studies over the last two decades have found large numbers of local religious organisations engaging in the practice.
Half a million birds were estimated to be released each year through religious ceremonies, accounting for 80% of the birds sold at the Yuen Po Street Bird Garden as of 2006. At that time, 78 local groups acknowledged engaging in such ceremonies, with as many as 3,000 birds released at a time in as many as 18 events per year. Some institutions were even documented ordering specific species ahead of organised mercy release ceremonies, sparking concerns about animals being paradoxically hunted to meet the demand for mercy release.

By 2010, the dynamics of the practice had shifted considerably. Research in 2010 found that, following outbreaks (2006-2008) of the zoonotic H5N1 pathogen in bird markets, public awareness campaigns by the HKSAR Government and negative coverage in local media, far fewer birds were being purchased and the overall volume of birds in the trade appeared to have declined. Indeed, surveyed religious organisations noted that many practitioners were opting for fish and seafood species instead. Even the numbers of participants had declined, with fewer than 200 people attending mass release ceremonies.

Nevertheless, it is clear from some media coverage and observations from concern and conservation groups that such mass abandonment events continue, even though attitudes may be changing (Box 14). Unfortunately, there has been little research since 2010 and current trends and the scale of the problem are currently not well quantified.

Box 14
Capitalising on Compassion: Buddhism & Biodiversity
In Hong Kong, the Government has tacitly accepted releases on the grounds that they are an expression of religious freedom.

The Hong Kong Buddhist Association (HKBA) has, however, recognised that mercy releases when conducted improperly can cause animal suffering, death and environmental health problems. In 2016, the HKBA issued a notice to discourage followers from releasing animals, noting that such releases not only prevent merit from being gained, but would also be considered a sin.

Aside from the karmic consequences, Buddhist leaders have further expressed concerns that adherents may be exploited by unscrupulous traders capitalising on their compassion, hunting and breeding animals specifically for trading as mercy release animals around auspicious dates, such as Buddha’s Birthday.

Practitioners in other jurisdictions have expressed an openness to reforming their activities, if the practice “would do more environmental harm than the good intended”, instead adopting lifestyle changes such as veganism or funding animal sanctuaries.

Recent research from Lingnan University focused on releases of bullfrogs (Hoplobatrachus rugulosus). Their findings reinforced concerns of disease risk posed by uncontrolled abandonment, as well as highlighting the poor conditions of such animals in the trade (e.g., lesions). Their recommendations included conducting further studies of the ecological impacts, raising public awareness and banning mercy release practices.

A variety of concerns persist with the practice, with mortalities of released animals chief among these. Estimates suggest that for every bird that arrives alive to market, a further 10 have died in transit.

Captive-breeding is often pursued as a means of reducing the pressures of trade on wild populations. Over 93% of CITES-regulated animals imported from 2015-2019 were reportedly sourced from various captive-breeding, ranching, farming or similar facilities/programmes, contrasting with the 191,300 sourced directly from the wild.

For non-CITES species, there is no indication of whether animals have been sourced from the wild, raising concerns about the sustainability of the populations in their source regions and highlighting the need for increased traceability throughout the trade (Section 4.3).

On the surface, captive breeding would appear to address some of the sustainability concerns around the exotic pet trade by alleviating the pressures on wild populations. In the case of CITES-regulated species, captive breeding and ranching have been identified by some proponents as key approaches to make the international trade sustainable. In principle, these programmes may help to minimise potentially deleterious impacts of the trade on wild populations by providing a buffer. However, the CITES Secretariat has noted that Parties are “concerned” that, despite various amendments to the rules, many animals declared as “captive-bred” are taken from the wild and traded in defiance of CITES’s terms.

The taking of wild caught animals to establish or replenish captive breeding stocks has been an ongoing problem in trade control. Without augmenting the gene pool, problems may arise within several generations, due to inbreeding. As a result, breeders may look to diversify their stocks by introducing wild-caught specimens (Boxes 7, 8, 9, 10 & 12). This can be done sustainably and legally for prolific species when effective systems are in place to distinguish captive-bred individuals from wild caught ones.

4.5 Captive, Wild and Ranched

4.5.1 A Solution or Challenge?
Captive-breeding is often pursued as a means of reducing the pressures of trade on wild populations. The trade has resulted in the loss of many wild populations, with some species facing extinction. The CITES Secretariat has noted that Parties are “concerned” that, despite various amendments to the rules, many animals declared as “captive-bred” are taken from the wild and traded in defiance of CITES’s terms.

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consumers and traders may pursue alternative means to procure even heavily-regulated animals. Spurred tortoise and Ball python, where demand has grown to surpass the capacity of the legal market, market rises. As has been shown to be the case for the Asian arowana, Yellow-spotted river turtle, African sedated tortoise (Cacatua sulphurea). Researchers from HKU have developed a method to detect whether an individual cockatoo was captive-bred or wild-caught using SIA testing, a method which could be applied in Hong Kong to determine whether a bird is being sold legally or not. Despite a ban on wild capture of the species in 2002 and local protections under Cap. 170, there are documented incidents of poaching of this species in Hong Kong. The researchers observed that there were more individual cockatoos, much of which has been poached from overstretched local populations or trafficked from countries with bans or quotas in place.

Species such as the Pancake tortoise, Annam pond turtles and African spurred tortoises (Section 4.2) have yet to gain access to samples from the markets. Breeds supplying Hong Kong markets have been repeatedly implicated in laundering animals poached from the wild or from jurisdictions with strict controls in place, illegitimately introducing them into the international trade. The trade in Yellow-spotted river turtles, which relies on supplementing stock with wild-sourced eggs or juveniles and re-introduction to ensure the sustainability, has been implicated in overharvesting and other illegal practices (Box 15).

In Hong Kong, attempts have been made to differentiate wild-caught and captive-bred animals through testing, most successfully with stable isotope analysis (SIA) for the Critically Endangered Yellow-crested cockatoo (Cacatua sulphurea). Researchers from HKU have developed a method to detect whether an individual cockatoo was captive-bred or wild-caught using SIA testing, a method which could be applied in Hong Kong to determine whether a bird is being sold legally or not. Despite a ban on wild capture of the species in 2002 and local protections under Cap. 170, there are documented incidents of poaching of this species in Hong Kong. The researchers observed that there were more individual cockatoos for sale in one year (2017-18) than have been documented as imported by CITES/AFCD records in the preceding 13 years. This excess suggests illegally harvested and trafficked cockatoos may be in the local trade, but researchers have yet to gain access to samples from the markets.

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4.5.4 Driving Demand

With the increasing rarity of some species, their value to collectors and corresponding price on the black market rise. As has been shown to be the case for the Asian arowana, Yellow-spotted river turtles, African spurred tortoise and Ball python, where demand has grown to surpass the capacity of the legal market, consumers and traders may pursue alternative means to procure even heavily-regulated animals.

4.5.2 Ranching

Some species are sourced from ranching programmes, whereby specimens or eggs are harvested from the wild to be reared in captivity. Whilst such programmes have been lauded for reducing poaching, engaging regional communities and supporting development, they remain dependent on wild harvesting which can be problematic. In principle, ranching programmes are required (where applicable) to release a portion of the captive-reared animals to replenish wild populations. However, it has been reported that some ranching programmes have engaged in problematic practices, including re-capturing animals shortly after conducting official releases and poaching animals from neighbouring areas to replace mortalities (Box 15).

4.5.3 Differentiating Captive and Wild Animals

Distinguishing captive-bred individuals from those that are wild-caught is a major challenge to the sustainability and oversight of the trade. Tracing through leg rings and microchips is not fool proof but can assist. Unfortunately, in some jurisdictions, including Hong Kong, metal leg rings are not required for use on captive reared birds.

Furthermore, microchips are generally not required for any captive bred species other than dogs (to control rabies). However, some species such as the Asian arowana and Radiated tortoise – which may only be imported from captive breeding operations in other jurisdictions – are required to be chipped prior to export (Part II: Section 4.3.2). In Hong Kong, attempts have been made to differentiate wild-caught and captive-bred animals through testing, most successfully with stable isotope analysis (SIA) for the Critically Endangered Yellow-crested cockatoo (Cacatua sulphurea). Researchers from HKU have developed a method to detect whether an individual cockatoo was captive-bred or wild-caught using SIA testing, a method which could be applied in Hong Kong to determine whether a bird is being sold legally or not. Despite a ban on wild capture of the species in 2002 and local protections under Cap. 170, there are documented incidents of poaching of this species in Hong Kong. The researchers observed that there were more individual cockatoos for sale in one year (2017-18) than have been documented as imported by CITES/AFCD records in the preceding 13 years. This excess suggests illegally harvested and trafficked cockatoos may be in the local trade, but researchers have yet to gain access to samples from the markets.

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5 Animal Welfare Concerns

5.1 The Five Domains of Animal Welfare

According to the World Organisation for Animal Health (OIE), animal welfare concerns the physical and mental state of an animal in relation to the conditions in which it lives (Box 16).\(^{197}\)

A guiding principle in animal welfare had been “The Five Freedoms” which has since been updated to “The Five Domains Model” (Table 4). These principles were the first widely accepted evidence-based framework for the analysis of animal welfare.\(^{198}\)

The concept of The Five Freedoms originated from the 1965 Brambell Report on the welfare of livestock production animals in the UK, which stated that such animals should have the freedom ‘to stand up, lie down, turn around, groom themselves and stretch their limbs’.\(^{199}\) It was the first report to feature dimensions of animal welfare that incorporated the physical and mental needs of animals, including their health status, behaviour and subjective emotional experiences.\(^{200}\) The inclusion of psychological needs was a significant step toward acknowledging animal sentience. Subsequently, in 1968, the British government introduced legislation protecting the welfare needs of farm animals, established the Farm Animal Welfare Advisory Committee (FAWAC) and formulated the Five Freedoms in the early 1990s,\(^{201}\) providing a framework that has since become influential in guiding animal welfare thinking and policymaking worldwide.\(^{202}\)

As a result of continued developments in animal welfare science, the “Five Domains Model” has been updated seven times since 2001.\(^{203}\) The Model acknowledges that for every physical problem indicated (e.g., unsuitable shelter), there may be accompanying impacts such as emotions or subjective experiences that also affect welfare, reinforcing the principle that the emotional needs of animals may be as important to welfare as its physical needs. The mental state of an animal is therefore an important consideration.

Criteria were further updated to include providing animals with a ‘life worth living’, through the requirement to provide positive experiences (e.g., ability to play, explore, forage, bond with cage-mates through allo-grooming\(^{204}\) or other activities, and the availability of a variety of food and enrichment)\(^{205}\). In order to achieve these needs, those responsible for the care of animals are required to provide environments that not only permit, but also encourage animals to express behaviours that are rewarding. Animals that do not have an overall good quality of life should be viewed as falling beneath an acceptable legal standard of care.\(^{206}\)

### Box 16

**Animal Welfare**

An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress.

Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter or euthanasia. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.

**Source:** OIE World Organisation for Animal Welfare

### Table 4

<table>
<thead>
<tr>
<th>Five Freedoms</th>
<th>The Five Domains</th>
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</thead>
<tbody>
<tr>
<td>1 Freedom from thirst, hunger, and malnutrition</td>
<td>Nutrition</td>
</tr>
<tr>
<td>2 Freedom from discomfort and exposure</td>
<td>Environment</td>
</tr>
<tr>
<td>3 Freedom from pain, injury, and disease</td>
<td>Health</td>
</tr>
<tr>
<td>4 Freedom from fear and distress</td>
<td>Mental State</td>
</tr>
<tr>
<td>5 Freedom to express normal behaviour</td>
<td>Behaviour</td>
</tr>
</tbody>
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*Photo Credit: Paul Hilton/Earth Tree images*
5.2.1 Introducing Quality of Life Considerations

The welfare of exotic and non-traditional pet species may be difficult to ensure, given their complex husbandry requirements, e.g., the need for temperature and humidity controlled environments with UVB lighting for reptiles. Even the most simple and obvious considerations may be overlooked or challenging to achieve for some private pet owners (PPOs) and traders, impacting the animal's welfare.

In contrast to more traditional pets such as dogs and cats, which have adapted to live with humans over thousands of years, most exotic species are not domesticated and thus retain much, if not all, of their natural behaviour and instincts. Accordingly, they require provisions in the captive environment which allow them to express normal behaviours. Ensuring quality of life requires recognition that animals should:

i. function well physiologically and behaviourally;
ii. feel well mentally by experiencing normal pleasures and not be subjected to prolonged and intense fear, pain or other negative states; and
iii. lead a reasonably natural life, through the use and development of their own natural adaptations and capabilities.

Each of these elements is expanded upon below, with their relevance to Hong Kong highlighted in Section 5.3.

Lack of knowledge of the proper care required for exotic pets may have serious consequences for their health and welfare. Poor husbandry can lead to stress, malnutrition and disease. Moreover, additional persistent stressors may compromise good welfare. These include inappropriate temperature, overcrowding, food rivalry, poor water quality, infection, lack of mental stimulation, lack of conspecifics for social animals, inability to escape from dominant conspecifics, lack of hiding places and excessive disturbance from humans or other pets.

5.2.2 Functioning Well

While good captive animal management is paramount to the quality of life and health of the animal, in Hong Kong even basic reasonable standards of care for exotic pets are often not met, and husbandry-related issues and nutritional deficiencies are commonly observed in Hong Kong’s exotic veterinary practices (Section 5.3).

The challenge of meeting nutritional needs

Failure to provide proper nutrition is a widespread concern for exotic pets. Inadequate nutrition is a leading cause of morbidity and mortality in reptiles, amphibians, birds and other exotic pets, as many pet owners and traders are not well-educated about the husbandry requirements of these animals. The nutritional needs of exotic species are complex and the nutrient composition, as well as the types of food consumed in the wild can be tremendously varied and dependent on geography, seasons, life-stage, reproductive cycle, etc. (Box 17). Malnutrition is reported to be responsible for up to 90% of pet bird diseases, and causes considerable death rates in pet parrots, yet many nutritional diseases could be prevented if good husbandry and nutrition were better understood.

Compared with domestic animals’ nutrition, far less is known about herpetological, avian and other wildlife nutrition, and the evidence-based literature is constantly being updated. Commericially produced food for exotic animals can be expensive and is not always widely available.

Addressing these concerns through improved regulation of the pet trade including training of traders and pet shop staff, and provision of evidence-based husbandry information to potential buyers would assist.

For animals where a nutritionally complete and healthful diet is particularly challenging to achieve and can be impractical to provide, their keeping as pets should be prohibited on welfare grounds. For other animals, good nutrition is possible, but requires expert handling and assistance from specialists.

Box 17 Example of Meeting Nutritional Requirements

Parrots

In the wild, parrots are able to balance their diet by consuming a large variety of food types, with high nutritional content. They consume foods high in calories, useful for satisfying high energy expenditure required to support flying, thermoregulation, reproduction, etc. in the wild. Unfortunately, while many parrots are seed-eaters, many traders and owners make the mistake of solely providing birds with seed-based diets, which can cause malnutrition and poor health. Such calorific foods are also excessive for pet birds living restricted, sedentary lives. Creating a balanced diet in the home often requires assistance and expert knowledge from veterinary specialists (Appendix C).

Sugar gliders

The diet of Sugar gliders in the wild consists of a variety of plant products (e.g., sap, blossoms and nectar) and invertebrates, which are difficult to source and impractical for feeding in captivity. Consequently, malnutrition and disease are common in captive Sugar gliders, as they are often fed nutritionally inadequate home-made diets and supplements, many of which are found to have an excess in protein, and are imbalanced in vitamins, minerals and amino acids.

For animals such as Sugar gliders, where a nutritionally complete and healthful diet is particularly challenging to achieve and can be impractical to provide, their keeping as pets should be prohibited on welfare grounds.

Note: Sugar gliders are illegal to trade but are, conversely, not illegal to own in Hong Kong.

The trade environment

Sourcing for the exotic pet trade raises serious animal welfare concerns. Capturing of wild animals often involves physical handling or capture methods that are stressful to the animal. Captive-bred animals also face welfare challenges, particularly when they are raised in over-crowded conditions.

Maintaining appropriate environmental conditions in the breeding, transport and sale of exotic animals is difficult to achieve, especially when large numbers of animals are involved. Traded animals are typically held in welfare conditions ranging from suboptimal to poor, with multiple opportunities for transfer of pathogens between animals. Many stages of the supply chain cause considerable physiological and psychological stress for the animals involved, leading them to succumb to diseases, suffer avoidable injuries and/or die (Section 5.3).

The captive environment

Death after purchase also raises significant welfare concerns. One study of reptiles kept as pets in the United Kingdom showed that 75% of reptiles died within a year of being purchased.

In a domestic environment, animals are often restricted to small and poorly designed enclosures or cages for their entire life. With the animals’ welfare entirely dependent on the keeper for provisions of appropriate nutrition, shelter and access to veterinary care, failure to provide for these needs can cause significant health issues. An owner’s ability to provide a suitable enclosure further determine their suitability for keeping many exotic species.

Although there are currently no data available in Hong Kong on the mortality rates of imported exotic animals, according to a vet survey in 2021 and communications with local veterinary teams (veterinary surgeons, nurses, assistants and practice managers), mortality rates caused by poor husbandry and avoidable infectious diseases are considered to be high. This is not surprising given the generally poor environmental state and hygiene conditions found in the local trade.
Box 18

Folklore husbandry

Folklore husbandry refers to methods or supposed ‘best practices’ which become established without proper consideration or evaluation. They are often justified because ‘it has always been done that way’ or for other unknown or poorly substantiated reasons. The belief that exotic pets may be easy-to-keep and can thrive in small enclosures is an example of this.

Many veterinary surgeons in general practice do not have the training and knowledge required to treat exotic pets and wildlife species, and owners may find it difficult to find reliable sources of information to inform good practice. Further, they may be unwilling to spend money for consultation with veterinary surgeons who are specialised in exotic pets.

There is often a misconception that exotic pet consultations should be cheaper due to the patient being smaller-sized. However, such expertise is rare as suitably qualified exotic veterinary surgeons and support staff require significant post-graduate education and continuing professional training. The treatment and surgeries for small-sized exotic patients require specialised skills and expensive, delicate equipment. Consequently, the fees are similar or may be higher in comparison to small animal (dog and cat) veterinary fees. To cut down on costs, it is common for owners to seek advice from pet stores and the internet, but the quality of information from these sources is variable and often contains outdated husbandry advice, which can sometimes be dangerous to the health of the animal.

5.2.3 Feeling well

‘Feeling well’ requires that the animals must not be excessively stressed by captivity and close proximity to humans and other animals. It requires an appreciation of the animals natural state, husbandry and behavioural needs, and knowledge of the species’ behaviour, both normal and abnormal.

Domesticated animals such as dogs and cats possess genetically ‘pre-adapted’ and favourable traits allowing them to co-exist with humans and other species in the captive context. However, wildlife and exotic pets are hard-wired with biological, behavioural and psychological instincts as well as needs that prime them for a life in the wild. In some species, close contact or frequent disturbance by humans is detrimental to their wellbeing, e.g., excessive grooming/barbering in small mammals; stereotypies, feather destructive behaviour/plucking in parrots.

Indicators of stress, pain and illness in exotic pets can be hard to detect even for professionals, as signs are often subtle, vague and non-specific. Known as the ‘masking phenomenon’, many exotic pet species have a strong tendency to hide their signs of illness and pain - an instinctive behaviour that helps hide their weakened state from potential predators in the wild. In addition, the rapid metabolism of many exotic pets (e.g., small mammals and birds) causes disease progression to be much quicker. Consequently, exotic pet patients may not be taken to a veterinary surgeon until they become so critically ill that they can no longer conceal their condition, and the small window of opportunity for medical care can easily be missed. Routine wellness examinations by specialist veterinary surgeons, diagnostic testing and preventative healthcare are thus extremely important when managing exotic species in captivity.

Box 19

Examples of Misinterpretation of Reptile Behaviours

A reptile that spends considerable time pacing against the glass of its enclosure is often interpreted as ‘active’, ‘happy’ and ‘asking to be petted’. Although this behaviour (‘interaction with transparent boundaries’, ITB) could be related to exploratory activity, it could also be a maladaptive behaviour or a stereotypy related to environmental and captivity stress. This situation necessitates prompt evaluation and improvements in the animal’s husbandry and enclosure design. Excessive ITB can create friction lesions and if the environment is not hygienic, a wound is a potential entry site for pathogens.

Some reptiles such as snakes are often observed to be in hiding in their enclosures. This observation had led to widespread belief that snakes do not need space to thrive. This belief resulted in the justification for snakes to be housed in racking systems and generally small enclosures, many of which are so spatially constrained that the snake can never extend its full body length. Behavioural research has shown that snakes prefer opportunities to move around and fully straighten their bodies to alleviate physical discomfort, provide physical comfort, satisfy basic thermoregulatory needs, exercise, as well as avoid stress and disease.

5.2.4 Leading Reasonably Natural Lives

Appropriate knowledge of an animal’s natural behaviour in the wild is a necessary precursor to creating a reasonably adequate habitat to ensure a good quality of life. The provision of species-specific husbandry, e.g., a suitably-sized artificial habitat with a variety of environmental enrichment (Box 20), is critical to good welfare.

Some species are highly social, e.g., rabbits, guinea pigs, chinchillas and, parrots, and their good welfare requires interaction with conspecifics, in the form of a bonded pair or group. Many other species, such as turtles and tortoises, are solitary with territorial tendencies and are only social during the breeding season.

Many experts agree that the need for companionship in most social exotic species can only be partially met by humans. Socially deprived animals are often found to be stressed and have behaviours detrimental to their wellbeing, e.g., excessive grooming/barbering in small mammals; stereotypies, feather destructive behaviour/plucking in parrots. In cases where solitary species are kept together, or social species are incorrectly introduced, incompatibilities and behavioural issues can occur, leading to stress, inability to access resources due to competition, food guarding, and aggression. Hostile behaviours exhibited by incompatible species can lead to serious injuries (Section 5.3.2, and Photos Series A: Images 10 & 11) and even death.

Activity levels during different times of the day also vary widely across species. Some species are active during the day (diurnal), others during dawn/dusk (crepuscular), or at night (nocturnal). Each should be exposed to appropriate photoperiods (i.e. day length, the period of time each day during which the animal receives light) and minimal disturbance or contact outside of these time periods.
“Environmental enrichment” is a concept that refers to modifications that enhance the level of physical and social stimulation provided by the captive environment. It is a dynamic process that aims to enhance welfare by increasing the behavioral choices available to the animals and encouraging species-appropriate behaviors and abilities. Examples of enrichment are provided below.

### Social enrichment for social species:
- Continuous and unrestricted pair or group housing with bonded animals (e.g., birds, rabbits, chinchillas);
- Positive interactions with humans where appropriate by species (including positive training activities) (e.g., birds, rabbits, rodents);

### Physical enrichment:
- Frequent and regular out-of-cage time with constant supervision (for birds, a safe space for regular flight exercise);
- Varied substrate (bedding and foraging, digging materials) (e.g., rabbits);
- A selection of suitable branches, ropes, climbing apparatus, and perches of different diameters, sizes (arboreal or climbing species, birds, reptiles);
- Materials for gnawing or chewing (rabbits, rodents, parrots); and
- Misting system for species that require high humidity (e.g., chameleons).

### Nutritional enrichment:
- Foraging opportunities (e.g., hidden food, forage/puzzle toys, scent trails);
- Novel food; and
- Novel delivery of food.

### Enrichment items that promote a sense of security:
- Hide boxes, tunnels and tubes (small mammals, snakes); and
- Caves (reptiles, aquatic animals).

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**5.3 Low Standards of Care**

**5.3.1 Introduction**

Informed by a veterinary survey, market observations and discussions with veterinary surgeons, nurses and support staff, one of the most concerning factors in exotic pet keeping in Hong Kong is that it is common for exotic pets to be kept in homes or pet shops where even the most basic husbandry requirements are not fulfilled.

AFCD conduct regular inspections to check whether ATL holders have complied with licensing conditions, however, as noted in Part II of this report, warnings and prosecutions are rare. Meeting appropriate quality-of-life considerations for Hong Kong’s exotic pets remains a challenge for PPOs and traders and many of the husbandry, animal welfare and environmental standards in place are insufficient. This is a situation due, in large part, to the outdated and ambiguous nature of the legislation which is both insufficient to protect the exotic animals and is challenging to enforce (see Part II).

The government intends to take forward a proposal to introduce a “duty of care” in Cap. 169 (Part II: Section 2) for keepers of all animals to ensure that their welfare needs are consistently met. This long-awaited amendment is welcomed.

**5.3.2 In-Situ Market Conditions and Home Care**

Extensive evidence of common poor husbandry and its consequences have been collated from both veterinary surgeons and market/shop observations.

**Incorrect Husbandry**

Local veterinary surgeons regularly see exotic animal cases that are suffering from a wide range of health issues due to incorrect husbandry, both in the domestic environment and in local markets.

Depending on which organs and tissues of the body are affected and to what degree, the animal suffering from husbandry-related diseases may present in a wide range of clinical situations. For instance, metabolic bone diseases (MBD) are often diagnosed in animals without proper husbandry, but it may not be obvious or easily identified early in the disease progression, until it causes severe physical changes such as those illustrated in Box 15 and Images 14 & 15. Further examples of medical conditions related to poor husbandry are provided in Table 5 and illustrated in Photo Series A: Images 4-25.

Cramped and unsanitary conditions observed at local pet markets and shops are illustrated in Photo Series B: Images 26-37.

It has also been observed that many social animals (e.g., rabbits, chinchillas, guinea pigs, and many species of birds) are commonly housed singly in small display enclosures, and solitary animals are housed in overcrowded conditions (e.g., hamsters, reptiles). The same observations have been made by local veterinary professionals, where staff often need to educate clients to find a suitable conspecific to bond with the existing animal, or to set-up a separate enclosure for solitary animals. However, these recommendations are often not fulfilled due to cost and space constraints.

Hong Kong’s pet shops are commonly the initial and primary source of husbandry information for pet owners, however the quantity and quality of information imparted may be inadequate, misleading and in some cases false.
Box 15  
**Case Study**  
**Chameleon with Nutritional Secondary Hyperparathyroidism (NSHP) due to Poor Husbandry**  

Case example courtesy of Dr. Violaine Colon, DVM, MSc, Diplomate ABVP (reptiles and amphibians).

**History:** A young chameleon was presented for anorexia and inability to walk properly for the previous two days. It was acquired four months previously from a pet shop in Hong Kong. The chameleon was kept loose on an indoor palm tree with no access to supplemental heat or UVB lights.

**Clinical examination:** The chameleon was responsive, still able to grip but not able to ambulate properly. The lower jaw was softer than expected and was able to be slightly bent on clinical examination. This is a sign of low bone density. Radiography was recommended and agreed on by the owner.

**Assessment and diagnosis:** On radiographic examination, the long bones were found to have a low bone density. The radius and ulna (forelimb bones) were bent as the bones were too soft (see image). This explains why the chameleon was not able to walk properly.

This condition is caused by nutritional secondary hyperparathyroidism (NSHP) and due to inappropriate calcium supplementation and lack of UVB lighting. This is a common metabolic bone disease among reptiles caused by inadequate husbandry. The disease is painful for the animal and is difficult to cure if not diagnosed early.

**Treatment and follow-up:** The chameleon was started on oral calcium supplementation, pain relief, and oral feeding formula. The owner came back 2 weeks later for a recheck appointment, reporting that the chameleon had improved. The owner had provided a vivarium with heat and UV lighting as recommended. The chameleon had started eating by itself. On clinical examination, the chameleon was gripping better but still not able to lift its body on its limbs. It was recommended to carry on with the oral supplementation and pain relief.

**Comment:** Unfortunately, the owner did not return for the next recheck appointment, so the condition of the chameleon is unknown.

The owner acted appropriately by taking the chameleon to be assessed by an experienced reptile veterinary surgeon and did improve the husbandry as recommended. Unfortunately, this was done late as the animal was presented with advanced disease. Most owners do not do research or have access to correct information before purchasing a pet.

Image: Radiography showing low bone density and bending of the long bones resulting in a painful condition (ventro-dorsal view)

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Image: Radiography showing low bone density and bending of the long bones resulting in a painful condition (ventro-dorsal view)
### Table 6
Examples of Species Common in Hong Kong's Pet Trade (2015-2019), Listed Lifespan and Size

<table>
<thead>
<tr>
<th>Animal</th>
<th>Common &amp; scientific name</th>
<th>Number of Animals Imported (2015-2019)</th>
<th>Lifespan</th>
<th>Indicative Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>African spurred tortoise (Geochelone sulcata)</td>
<td>119/24</td>
<td>80-100 years</td>
<td>Weighs 48-90 kg</td>
<td>Length 76 cm</td>
</tr>
<tr>
<td>Aldabra giant tortoise (Aldabrachelys gigantea)</td>
<td>6,289</td>
<td>Up to 150 years</td>
<td>Weighs up to 250 kg</td>
<td>Length 90 cm - 12 cm</td>
</tr>
<tr>
<td>Common snapping turtle (Chelonia serpentina)</td>
<td>93,049</td>
<td>30-47 years</td>
<td>Weighs 4-34 kg</td>
<td>Length 177-46cm</td>
</tr>
<tr>
<td>Alligator snapping turtle (Macrochelys temminckii)</td>
<td>7749</td>
<td>45-70 years</td>
<td>Weighs up to 90kg</td>
<td>Length up to 80 cm</td>
</tr>
<tr>
<td>Common green iguana (iguana iguana)</td>
<td>127,521</td>
<td>10-20 years</td>
<td>Weighs up to 8kg</td>
<td>Length 2 meters</td>
</tr>
</tbody>
</table>

### Table 5 (cont'd)
Examples of Commonly Observed Medical Conditions related to Poor Husbandry and/or Malnutrition in Hong Kong

<table>
<thead>
<tr>
<th>Condition Type</th>
<th>Example of common clinical signs, diseases and causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute manifestations of chronic disease</td>
<td>• The animal's immune system is compromised, and without correcting husbandry failures, the animal is predisposed to secondary conditions and progression of existing diseases. The animal's bodily functions deteriorate and become acutely sick.</td>
</tr>
<tr>
<td>Birds</td>
<td>• Exposure to new stressors such as toxins or respiratory irritants (e.g., cigarette smoke, or fumes from overheated Polystyrene or Polyethylene cookware) may trigger an underlying chronic disease such as Aspergillosis (Images 22 &amp; 23).</td>
</tr>
<tr>
<td>Terrapins</td>
<td>• Kidney failure and gout due to prolonged poor husbandry, dehydration, and an incorrect diet with excessive protein.</td>
</tr>
<tr>
<td>Small herbivorous mammals (rabbits, chinchillas, guinea pigs)</td>
<td>• Gut-stasis due to cessation of eating, triggered by systemic illnesses, dental diseases, pain, stress from disturbances in the domestic environment.</td>
</tr>
</tbody>
</table>

### Table 7
Examples of Prices of Animals Observed at Hong Kong Pet Shops and General Fees at some Veterinary Clinics

<table>
<thead>
<tr>
<th>Animal</th>
<th>Cost of animal (HKD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamster</td>
<td>15-150 each</td>
</tr>
<tr>
<td>Red-eared slider terrapin</td>
<td>30 each, 50 for two, 50 for three</td>
</tr>
<tr>
<td>Reptiles</td>
<td>From tens to thousands of dollars</td>
</tr>
<tr>
<td>Avian</td>
<td></td>
</tr>
</tbody>
</table>

### 5.3.3 The Suitability of Pets Raises Quality of Life Concerns

An animal's suitability as a pet varies depending on the species' characteristics and needs including husbandry requirements as highlighted above. The presence of unsuitable species in the pet trade has resulted in serious animal welfare issues, compromises public health and safety, and provides conservation challenges.

### Large Animal Size

Hong Kong's small living spaces are a notable factor when determining the suitability of a pet. The average living space of public rental housing tenants recorded in 2020 in Hong Kong was 13.4 square meters per person. Consequently, many pets live in very small spaces and exotic pets are often provided with inappropriate small cages and limited out-of-cage exercise/play areas. Most owners of birds are unable to accommodate a safe area suitable for flight exercises.

Some species grow to be particularly large, for example Aldabra giant tortoises, African spurred tortoises (Sulcata), snapping turtles, and iguanas (Table 7 and Photo Series C: Images 38-42). These large reptiles are commonly sold as hatchlings and kept as pets in Hong Kong apartments. The large size of such animals is hard to accommodate, as a result enclosures may be too small or absent with the animal either being confined to a bathroom for example, or left to roam free in an apartment (Image 3).
Box 22

Potentially Dangerous Reptiles - Species in Focus: Alligator Snapping Turtle

The Alligator snapping turtle (Macrochelys temminckii) is naturally found in North America and is listed as ‘Vulnerable’ on the IUCN Red List. It is one of the strongest and largest of nearly 300 chelonian species. As adults, they typically weigh between 70-80 kg, but in certain conditions, individuals are able to reach up to 113 kg and a length of up to 80 cm. Due to their size, powerful jaws and tendency to bite when disturbed, they are commonly referred to as ‘gator snappers’.

In the USA, a medical case report documented the complete finger amputation of a 15-year-old who attempted to lift a wild Alligator snapping turtle from its aquatic environment to photograph the animal. The teenager lost their finger and required aggressive wound treatment in the hospital, as animal bites and those “sustained from aquatic environments are notorious for producing infections that are polymicrobial (infections by multiple pathogens), highly-pathogenic and potentially life-threatening”.

Although this case was from the USA, the ownership of these turtles in a domestic environment, their unnatural existence in Hong Kong’s waterways from abandonment, etc. may pose a hazard to members of the public, particularly within the country parks.

Potentially Dangerous

Many animals are capable of inflicting injuries on humans and other pets through bites, scratches, kicks and in the case of some species of birds, stabbing. However, species that are large, easily stressed, notoriously aggressive or have venom are particularly dangerous (Section 6.3).

Snapping turtles and Common green iguanas are imported into Hong Kong in high volumes (Table 7 and Box 22). With their large sizes and powerful bites, housing these animals in the domestic environment can be extremely dangerous, yet they are a relatively common pet species kept locally. Pet shops on Tung Choi Street often sell these species as hatchlings, and veterinary staff note that it is relatively common to see owners unaware of the size that these animals are capable of growing to and are unaware of the dangers that they pose, especially to young children. After realising the husbandry requirements and skills that are required in handling these animals, some owners do not feel capable or comfortable in keeping them and seek assistance to rehome them. Abandoned snapping turtles are commonly spotted in Hong Kong’s natural waterways and retrieved by animal rescue groups.

Examples of Husbandry Issues Commonly Observed by Veterinary Surgeons in Hong Kong

Photographs courtesy of both Dr. Zoltan Szabo [Dipl.ACZM, Dipl.ABVP(ECM), Dipl.ABVP(Avian)], a triple-boarded exotic specialist veterinarian in Hong Kong, and Tai Wai Small Animal and Exotic Hospital.

Image 4

Neurological signs and seizures observed in an African grey parrot (Psittacus erithacus)
The condition is due to the bird being fed a seed-based diet, which caused severe hypocalcaemia (low blood calcium levels).

Image 5

A juvenile Yellow-crested cockatoo (Cacatua sulphurea) with a crop burn
The condition resulted from being fed formula that is too hot. The thermal exposure led to tissue necrosis of the crop wall (a food storage organ in many species of birds) and skin, causing the formation of a hole.

Image 6

A Black-headed caique (Pionites melanocephalus) with severe leg injury
The injury was due to a constrictive leg ring. The bird’s leg was so inflamed that the ring cut into the tissue to the bone, which is evident in the radiographs shown. Leg rings can cause issues if they are incorrectly placed, if an incorrect size is used, if the ring is damaged, if the leg is swollen due to an injury, or if debris are lodged in between, causing constriction.

Image 7

An African grey parrot (Psittacus erithacus) with fractured leg
This bird had a tethering chain around its leg which was trapped between the wires of its cage. As the bird panicked and tried to fly away to free itself, the leg fractured. Fortunately, the bird received high quality care and orthopaedic surgery from a veterinary specialist. Tethering chains not only severely impacts a bird’s welfare through movement restriction, but they are also extremely dangerous and often cause serious injuries (see also Image 34).
Examples of Husbandry Issues Commonly Observed by Veterinary Surgeons in Hong Kong

Image 8
Radiographs showing metal foreign bodies in a parrot
Without a diagnosis and treatment, the bird could suffer from heavy metal toxicosis.

Image 9
A lizard with a thermal burn
Thermal burns can occur under a variety of conditions, e.g., due to close/direct contact with a heat source or faulty electrical equipment. Methods to prevent such injuries are available, e.g., using protective wire cages or mesh over the heat lamps.

Image 10
a. A Blue-and-yellow macaw (Ara ararauna) with mandible fractures from a dog bite
After stabilization of the patient, a CT scan was required to identify the extent of the damages to the mandible and skull. Orthopaedic surgery and feeding tube placement by a highly trained exotic veterinary specialist, and intensive nursing care allowed the patient to recover from the ordeal.

b. A Hahn’s macaw (Ara nobilis cumanensis) with holes on both sides of its beak due to a bite from a much larger parrot in the same household

Image 11
A young African spurred tortoise (Centrochelys sulcata) with shell perforation from a dog bite

Image 12
A Chinchilla (Chinchilla lanigera) with its head stuck in a hay dispenser ball
The design of some food racks/dispensers make it challenging for the animals to reach the food once the top layers are eaten. As a result, the animal needs to push its head between the bars to reach for more food. Hay racks or dispensers with bars that are too wide and flexible are especially dangerous.

Image 13
Stress bars on bird feathers
Stress bars are lines or bands that run crosswise through a bird’s feather shaft. Veterinary surgeons often recognise and link these with illness, nutritional deprivation, and/or high stress, during the time that the feather was formed.

Image 14
Metabolic bone disease in a bird
Metabolic bone diseases (Nutritional secondary hyperparathyroidism; NSHP) results from a dietary imbalance of calcium and phosphorous, and/or a deficiency in vitamin D. Curving deformities of the bone can be seen in the radiographs. Pathological fractures (broken bones caused by disease) can be seen in these cases.
Pyramidal growth syndrome in chelonians

‘Pyramiding’ is excessive growth and thickening of scutes on the carapace (upper shell), causing each scute to be raised above the level of its margins, giving the appearance of pyramids. This condition is commonly seen in captive-reared tortoises and is likely caused by multiple factors, but linked with less-than-ideal husbandry conditions.

Metabolic bone disease and shell deformities in chelonians

Shell deformities are often due to poor husbandry and are extremely difficult to reverse. Such abnormalities are likely lifelong and could cause other issues in the future, e.g., difficulty in passing eggs due to malformation of the eggs and obstruction linked to misshapen shell and pelvis (dystocia/egg binding). Prevention is thus important, and must be focused towards ensuring correct husbandry, such as a proper diet with correct calcium and energy contents and sufficient exposure to short-wavelength ultraviolet (UVB) light for vitamin D synthesis etc.

a. A Leopard tortoise (Stigmochelys pardalis) with abnormal jaw and soft shell was presented to the hospital due to bleeding on the rear end of its shell
b. Another tortoise with severe metabolic bone disease
c. A range of terrapins with severe shell deformities

Leopard tortoise with ‘shell rot’

Untreated shell trauma and poor husbandry resulted in extensive shell rot (ulcerative shell disease). The tortoise required surgical repair of the shell, a feeding tube, and long-term management and nursing care.

Terrapin with an aural abscess

Aural abscesses (accumulation of caseous material due to infection within the middle ear or tympanic cavity) are most commonly seen in terrapins. The condition is linked with improper husbandry such as poor hygiene and vitamin A deficiency.

Dental diseases in small herbivores

Dental diseases are common, and are usually due to an improper diet that does not allow these animals to grind down continuously growing teeth (lack of fibrous hay, and over ingestion of large amounts of soft foods such as fruit, pellets, and treats). Prevention is key, as disease is life-long and requires veterinary care such as regular trimming under general anaesthesia.

a. Severely overgrown incisors in a rabbit
b. Overgrown teeth can become sharp spikes that cut into the cheeks, gums, tongue and palate, causing ulceration, pain and difficulty chewing food
c. Severe dental disease can result in the development of infection and abscesses. Infections that are left untreated for prolonged periods can lead to osteomyelitis (infection of the bone)
d. The rabbit required surgery and long-term veterinary management
Pododermatitis

Pododermatitis, also known as ‘bumble foot’ (in affected birds) or ‘sore hocks’ (in affected rabbits) is an inflammatory condition of the feet. The disease can be observed in a range of species where the animal is kept under inappropriate conditions such as exposure to excessive humidity, unhygienic conditions, and abrasive or hard cage flooring/bedding/substrate/perch. Infection and abscess development is also common. In chronic stages, deeper tissues may be affected and osteomyelitis can develop.

a. Pododermatitis or ‘Bumblefoot’ in a bird
b. In a rabbit (ulcerative pododermatitis or ‘sore hocks’)

c. In a guinea pig
d. In a terrapin

Calculi formation

Calculi (stone) formation is multifactorial but is usually related to husbandry issues, such as dietary imbalances (e.g., excessive calcium in rabbits, or excessive protein and/or water deprivation in tortoises).

a. In a rabbit
b. In an African spurred tortoise (Centrochelys sulcata)
c. Extracted from the African spurred tortoise pictured in b

c. In a guinea pig
d. In a terrapin

Avian aspergillosis

Radiographs and endoscopy images show signs of Aspergillosis in a bird. Aspergillus is a ubiquitous fungus, but both humid and very dry and dusty environments promote excessive fungal growth. Aspergillosis in birds is a common cause of chronic respiratory disease and is challenging to diagnose and treat. Birds may be predisposed to this by poor management, stress, malnutrition, and exposure to respiratory irritants (e.g., cigarette smoke).

Chronic respiratory disease and rhinolith in an African grey parrot

Chronic respiratory diseases that produce excessive nasal discharge can accumulate with dust and other debris and cause nasal rhinoliths. Rhinoliths can alter the normal shape of the nares. This condition is associated with poor husbandry.

Emaciation disguised under feathers

These two Cockatiels (Nymphicus hollandicus) were presented to the veterinary hospital on separate occasions by different clients. On presentation, the birds were very dull and in respiratory distress. The owners reported that the birds had been bought from Yuen Po Bird Market less than a month prior, but the birds had seemed bright and had been eating well initially. Unfortunately, both passed away shortly after presentation at the veterinary clinic.

The feathers on the dead birds were parted to show the lack of breast muscle and fat alongside the keel bone; both birds were in very poor body condition and severely emaciated. The bird on the left (Image 24a) had diarrhoea and nasal discharge, and was diagnosed to be positive for avian Chlamydiosis (Psittacosis), a zoonotic infection. The images illustrate that birds are able to hide their signs of illness (masking phenomenon), subtle signs of disease may be overlooked, and emaciation can be disguised under their feathers.
Feather barbering
A Red-and-green macaw (Ara chloropterus) with feathers damaged through chewing. The cause of feather damaging behaviours in birds is multifactorial and can be due to physical and/or behavioural problems. Physical causes include infection, allergy, parasites, malnutrition, toxicoses, and underlying pain. Psychological causes include anxiety, displacement behaviour secondary to stressors, attention seeking, boredom, and compulsive disorders.

The general layout of the facilities observed at Hong Kong pet shops and particularly at the Yuen Po Bird Market have been observed to be generally cluttered, which significantly impairs effective cleaning. Many shops are evidently poorly maintained – overt stains-smears and debris can frequently be seen on floorings, walls, and furnishings at bird market shops. Feral pigeons and other wild birds often wander, feed and excrete around or near the shop cages, further increasing the risk of disease transmission to both pet shop birds and wildlife.

Due to lack of space, cages are often cramped, and stacking is common. This increases the risk of cross contamination of feces and substrates, i.e., materials used for lining pet cages, from one cage to another. Animals that are kept low or near the ground may experience stress from too close a proximity to visitors/passers-by.

African grey parrots (Psittacus erithacus) Listed as Endangered on IUCN Red list, listed as Appendix I on CITES, these birds are popular in Hong Kong.

Two juvenile African grey parrots looking sick and feathers fluffed up with a large dish of sunflower seeds. Sunflower seeds are considered an unhealthy seed choice and should only be used as a treat, yet it is common to see traders provide such seed-based diets.

A lone African grey parrot kept amongst stacked cages and a cluttered environment.

A parrot shows feather plucking signs on its lower half of the body. Such behaviours are commonly seen in socially and mentally deprived parrots, but may also have underlying medical causes.

General unsanitary conditions at Yuen Po Bird Market
a. Passerine cages stacked above parrot cages. Note old stains on the wall, ground and in the cage are evident. Birds are being fed mainly on sunflower seeds which can contribute to malnutrition.

b. General unsanitary conditions and health hazards. Note that water bowls are placed below perches, consequently the bowls are contaminated with droppings from above.
A Blue and yellow macaw (*Ara ararauna*) stereotypes and paces in a small cage (a form of abnormal behaviour that often indicates poor psychological well-being and/or frustration).

Birds showing signs of illness are frequently seen at the local bird market. These birds appeared dull during the early afternoon hours, when they should normally be bright and alert. They were no longer capable of masking signs of illness and were likely suffering from severe disease and/or pain, exhibiting rumpled feathers, strained breathing, tail or head bobbing, etc. Some injuries were likely a result of cramped conditions and being housed with other incompatible or aggressive species.

- a. Tanimbar corella (*Cacatua goffiniana*).
- b. Budgerigars.
- c. Lovebirds.

Red whiskered bulbul (*Pycnonotus jocosus*), a common native bird being offered sponge cake roll by the trader. Evidently unhealthy as it was fluffed up, quiet, with wings held in an abnormal position. In addition, it had poor feather quality and a scissor beak.

A lovebird (*Agapornis fischeri*) is kept in a cage with Budgerigars (*Melopsittacus undulatus*). Lovebirds have a strong, powerful beak that can and do inflict serious wounds to other birds.

Munias arriving at Yuen Po Bird Garden in June 2020

- a. Several shops were seen to have munia species in wooden cages and usually placed in a corner of the shop.
- b. A sign labelling these as ‘release birds’.
- c. A batch of munias (mostly falcated munias and some Chestnut munias) arriving in the afternoon in a trolley, subsequently pushed into shops.
- d. Images show how crowded and unsanitary the transport conditions were, with multiple dead bodies seen from the periphery and in water bowls. From observation of the behaviour, the birds were extremely stressed, with many thrashing about against the bars.
Crammed and Unsanitary Conditions in Local Exotic Pet Markets and Shops

Substandard and overcrowded conditions are commonly seen across reptile pet shops in Hong Kong:

a. Terrapins in a small tank of water with no platform, no UVB lighting, no temperature range available, no basking spot, and no space to turn or move properly.

b. A yellow-margined box turtle (Cuora flavomarginata) in a tank that is so small it cannot turn or walk. Above it, a bullfrog was kept in a tank so small that it was likewise unable to move.

c. Reptiles such as terrapins can produce large amounts of waste products. When kept in shallow water and overcrowded conditions, ammonia levels and other waste products in the water will be extremely high.

d. Some reptile shops showcase several larger, more aesthetically-pleasing, or even semi-naturalistic enclosures. However, on closer inspection, many important husbandry facilities may be lacking. It is also common to see other stock animals kept in very basic, barren tanks at these shops.

e. Reptiles and amphibians are commonly held in take-away boxes intended for containing food.

Birds are commonly seen tethered at bird markets, sometimes even while they are in their cages. Restricting a bird’s movement impacts negatively on their welfare, and chains can inflict serious injuries (see Image 7).

Inadequate rabbit enclosures

Glass enclosures may retain too much heat in summer or during afternoons when the sun shines on the glass, and the ventilation bars may be inadequate to dissipate heat efficiently. A thermometer is displayed on the outside of the enclosures which measures the ambient temperature of the area rather than the temperature inside the enclosures. In addition, only dripper water bottles are provided. The provision of both open water bowls and dripper bottles is important, in case dripper bottles leak or fail to work. In addition, a study in 2011 demonstrated that rabbits have a clear preference for open water dishes.
Snapping Turtles in the Legal and Illegal Pet Trade

Image 38
An Alligator snapping turtle (M. temminckii) kept in a barren tank in a pet shop on Tung Choi Street

Image 39
Young snapping turtles (in the first small green tray from the right) outside a pet shop on Tung Choi Street

Image 40
a. A small Common snapping turtle (C. serpentina) transported in a take-away food container
The turtle was taken to a Hong Kong vet clinic due to a bite injury from another snapping turtle housed together in a small tank. Young turtles are often sold and kept in pairs without taking into account their solitary nature and ability to grow large and aggressive.
b. Large C. serpentina transported to a veterinary hospital in Hong Kong in large storage box
To give medication to a large and aggressive snapping turtle presents a considerable challenge and risk to most owners.
c. A large Alligator snapping turtle (M. temminckii) dead on arrival at the veterinary hospital.
The client did not want a necropsy performed so the cause of death was not identified.

Image 41
An abandoned M. temminckii caught by SPCA Inspectorates in Hong Kong
Stray snapping turtles are frequently captured by SPCA and other volunteers from Hong Kong’s waterways.

Image 42
High-volume seizures of hatchling-sized C. serpentina have occurred in the past
One such seizure was sent for temporary holding on behalf of the Authorities but in the end the turtles had to be euthanized on humane grounds.

Image 43
High volumes of seized C. serpentina.
Spreading of epizootic and zoonotic diseases as well as trauma or envenomation inflicted by exotic pets are public health and safety concerns. The large volumes and wide variety of animal species involved in the exotic animal trade (Section 3) and the often-poor conditions the animals are transported and kept in (resulting in stress and ill health) (Section 5), affect disease resistance and increase the potential for the shedding of pathogens and risk of transmission. This may include pathogens established in a species spreading to another host in the trade or in home environments, or being introduced into native wildlife where exotic pets have been released or escaped (Image 44).

Once a disease is established in a wild population, it can have dramatic impact on local biodiversity, and controlling or eradicating it can be challenging. One example is the amphibian fungal disease (Chytridiomycosis, better known as Chytrid fungus) that has caused global amphibian declines and extinctions. A 2014 study showed evidence of chytrid and ranavirus in commercial shipments of live amphibians imported into Hong Kong. As noted in Part II of this report, Hong Kong’s amphibian trade remains largely underregulated.

The prevalence and diversity of both epizootic and zoonotic pathogens in Hong Kong’s exotic pet trade have however not been well studied. Such research is needed to inform the development and enforcement of robust and comprehensive regulations and policy, to control, manage and prevent potential disease outbreaks. Relevant regulations have not kept pace with the growth or changing dynamics of Hong Kong’s exotic pet trade (Part I).}

Infectious diseases are caused by organisms such as bacteria, viruses, fungi, helminths and other parasites. A ‘host’ is defined as a species (animal or non-human animal) that can be infected with a pathogen. While some organisms and disease strains are more pathogenic than others, the presence or isolation of such organisms from an animal or human does not mean that the pathogen will cause disease.

Where an animal’s immune system is compromised however, there is greater susceptibility to succumbing to disease. Some animals are capable of not showing clinical signs of infection, but are capable of being carriers and spreaders of a pathogen.

A potentially infectious agent can be transmitted directly from its natural reservoir to a susceptible host via different pathways. These may include skin-to-skin contact, biting, licking, sexual intercourse, direct contact with contaminated soil or vegetation, or by droplets spread via spray through sneezing or coughing. Indirect transmission may also occur through contact with contaminated objects.

Prior to import into Hong Kong, birds are required to be tested for Avian influenza (AI) and turtles for Salmonella (Part II: Section 3.4). For other taxa, veterinary checks and quarantining are typically not required, and observation for other infectious diseases may not be a focus, despite the potential threat to the health and welfare of other species, e.g., domestic pets and local wildlife. Once purchased, such exotic pets are likely to be kept in close contact with humans and possibly other domestic and non-domestic animals.

In domestic markets, the AFCD monitors AI at licensed bird traders, collecting around 300 swab samples every month. The licensed premises will be temporarily closed and disinfected if the AI virus is detected and other birds at the shop are usually euthanized. Figures of bird mortalities are not monitored or kept by the department (Part II: Section 7).

Cases of animal escape, abandonment or deliberate release into the urban and wild environments (Section 4.4) further represent a risk of introducing diseases alien to local wildlife.

The limitations inherent in current protocols, combined with poor husbandry (Part II: Section 3) means that inadvertent import and transfer of diseases remains a potential risk. Local veterinary surgeons often suspect infectious diseases in their patients, yet find it hard to persuade clients to do the necessary confirmatory testing as the veterinary costs often make diagnostics prohibitive.

Many infectious animal diseases persist in the exotic pet trade. Some significant examples are highlighted below (Table I).
<table>
<thead>
<tr>
<th>Important Zoonosis</th>
<th>Statutory Notifiable Diseases (HKO)</th>
<th>Source</th>
<th>Pathogen</th>
<th>Host Range/ Species Affected</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avian Chlamydioides (Pittaciaceae, Parrot fever, Chlamydia psittaci)</td>
<td></td>
<td>Avians, Mammals (including Humans)</td>
<td>Birds arriving in Hong Kong may have samples taken for testing of avian Chlamydioides, depending on country of origin or consignment conditions (Part II: Section 3.4). Contagion risk from direct contact with fomites (on feather dust and cage items), faeces and contact with nasal or ocular discharge, etc. See Table 9 for example cases in Hong Kong, and Appendix G for example cases reported overseas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rabies</td>
<td></td>
<td>Mammals</td>
<td>All mammals can be infected. Dogs are the only mammals locally required to be licensed and microchipped as proof of vaccination (to be vaccinated from 5 months of age and repeated at 3-year intervals with renewal of license). Hong Kong has been free of rabies since the 1990s; however, legal and illegal imports of mammals from countries where rabies is endemic remain a potential risk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salmonella spp.</td>
<td></td>
<td>Avians, Reptiles, Mammals (including Humans)</td>
<td>Pet turtles must be tested negative prior to import. On arrival in Hong Kong, AFCD may take samples for testing (Part II: Section 3.4). Can be transmitted from asymptomatic and healthy individuals. Contacts with reptiles and small pet turtles have been linked to human outbreaks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avian Influenza</td>
<td></td>
<td>Avians, Mammals (including Humans)</td>
<td>Birds must be tested prior to import. On arrival, birds will have samples taken and held in quarantine until results are negative (Part II: Section 3.4). AFCD monitors the disease by collecting around 300 swab samples from licensed pet bird traders every month. Can be stable and remain viable in the environment for long periods (see Table 10 for example local cases).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycoplasma spp.</td>
<td></td>
<td>Avians, Reptiles, Amphibians, Mammals, Fish</td>
<td>Considered host-specific, however, reports of animal mycoplasmas have been found in humans and other non-host species (mostly immunocompromised individuals and those with persistent, close contacts). The escape or release of captive tortoises has been linked to occurrences and outbreaks in overseas wild populations. Mycoplasma infections are considered highly contagious and pathogenic (dependent on species and condition of host animal, strain of Mycoplasma etc.). Subclinical infections and asymptomatic hosts have been shown to be capable of transmitting the disease, and persistent infection resistant to antimicrobial treatment is common.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mycobacteria other than tuberculosis (MOTT)</td>
<td></td>
<td>Avians, Reptiles, Amphibians, Mammals, Fish</td>
<td>Numerous Mycobacterium spp. have been associated with exotic pets. Lesions in reptiles and asymptomatic birds may shed the disease. High survival potential in the environment. Some species may be readily recovered from the environment (soil, dust, water bodies, etc.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacheco's Disease</td>
<td></td>
<td>Fish, Amphibians</td>
<td>Ranavirus is an increasingly important pathogen in reptiles and amphibians, and its spread has been associated with the pet trade. A 2012 study showed evidence of ranavirus in commercial shipments of live amphibians imported into Hong Kong. Found on animals and in the water transported in the shipment, demonstrating the risk of pathogen pollution by the disposal of untreated wastewater.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peste des Petits Ruminants</td>
<td></td>
<td>Sheep, Goats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smallpox</td>
<td></td>
<td>Humans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plague</td>
<td></td>
<td>Rodents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rabies</td>
<td></td>
<td>Mammals</td>
<td></td>
<td>Infection in tortoises typically results in upper respiratory tract disease, and survivors may develop central nervous system disorders (e.g., paralysis or incoordination).</td>
<td></td>
</tr>
<tr>
<td>Herpesviruses</td>
<td></td>
<td>Reptiles (Most significant in tortoises)</td>
<td>Overseas, there have been multiple cases of herpesvirus strains reported to be found in previously unaffected chelonian species; its spread has been linked to the trade. Infection in tortoises typically results in upper respiratory tract disease, and survivors may develop central nervous system disorders (e.g., paralysis or incoordination).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrytpidosis</td>
<td></td>
<td>Amphibians</td>
<td></td>
<td>International movement of amphibians for pet trade and research have been implicated in transmission, resulting in mass mortalities and extinctions.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- A 2012 study showed evidence of ranavirus in commercial shipments of live amphibians imported into Hong Kong. Found on animals and in the water transported in the shipment, demonstrating the risk of pathogen pollution by the disposal of untreated wastewater.

**Important Zoonosis:** Important diseases related to the exotic pet trade in general. **Statutory Notifiable Diseases (HKO):** Statutory notifiable diseases under the Health and Pre-Entry Screening (Foreign Animals) Ordinance (PBFD). **Source:** Source of data for diseases and their occurrence. **Pathogen:** Pathogen responsible for the disease. **Host Range/ Species Affected:** Host range and species affected by the disease. **Comments:** Comments on the disease, including transmission routes, prevention, and control measures.
### 6.3 Zoonotic Diseases

A zoonosis is an infectious disease (bacterial, viral, fungal or parasitic) that can be transmitted between non-human animals and humans. Exotic pets have been documented to carry a wide variety of pathogens, which under certain conditions can cause disease in humans. Transmission of multi-drug resistant bacteria is also emerging as an area of concern, due to the documented overuse of antibiotics.

In Hong Kong, zoonotic diseases are included in the government’s notifiable disease lists (Appendices E and F) and include Avian influenza, rabies, psittacosis, leptospirosis amongst others. Case examples of Avian influenza and psittacosis relevant to Hong Kong’s pet trade are provided in Tables 9 and 10. Cases of psittacosis overseas are provided in Appendix G, illustrate the severity and occurrence of such diseases. Stringent regulations and disease control protocols (veterinary inspections of all imported animals, disease screening, quarantining, raising husbandry and hygiene standards in the pet ownership and trading industry, etc.) are critical to effectively manage the transmission of infectious diseases.

A One Health approach (Section 1) to disease management is advocated by OIE, WHO, FAO and UNEP.

Even where professional examination of animals occur, diagnosis of zoonotic diseases can be missed, misdiagnosed or delayed due to the lack of clinical suspicion or knowledge of zoonotic infections, or a failure to obtain adequate clinical histories. Undiagnosed or inappropriately treated zoonotic infections in humans such as psittacosis can cause severe health problems or even death.

Poor environmental conditions at the exotic pet shops and markets create ideal environments for breeding pathogens and promote cross contamination to other animals and humans (see Section 5.3). Upon visiting the shops, there is risk that visitors may pick up pathogens, potentially spreading them far beyond the original source of contamination. These pet shops and markets are often situated adjacent to high traffic shopping, residential and recreational areas. For example, Yuen Po Street Bird Garden is adjacent to the Flower Market, numerous apartment blocks, Mong Kok Stadium and several high-volume MTR stations, not to mention being a popular tourist spot.

Globally, diseases can be imported via infected arthropod vectors through the international trade. Exotic pets have been documented to carry a wide variety of ectoparasites on internationally traded exotic species, many of which are cited to be imported undetected. Although usually host-specific, ticks can and do affect new hosts. Tick-borne diseases are an important concern in both human and veterinary medicine, as ticks are capable of transmitting a large variety of pathogens, many of which cause debilitating diseases in many species and some of which are known to be zoonotic, e.g., West Nile Virus and Lyme disease.

Multiple studies of exotic pet trades overseas have focused on the potential of imported tick-borne diseases and found large diversity in tick species, e.g., in reptiles, with a high potential to carry dangerous pathogens. However, such studies in Hong Kong are not known and the risk of tick-borne vector diseases remains uncertain.

#### Table 9
**Example cases of Psittacosis (Chlamydia psittaci) reported in Hong Kong**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location attributed to disease acquisition</th>
<th>Additional Information</th>
</tr>
</thead>
</table>
| 2011      | Birds at a workplace bought from a pet shop in Wan Chai | • A 28-year-old man developed symptoms of Psittacosis and was admitted to the Hospital and PCR testing confirmed C. psittaci.  
• Investigations revealed he had contact with parrots at work that were bought from a pet shop in Wan Chai. Four of his colleagues reported similar symptoms, had sought medical treatment and had recovered. |
| 2012      | AFCBD’s New Territories North Animal Management Centre (NTNAMC) | • Three staff tested positive, 59 were contacted by the Centre for Health Protection, eight had symptoms, and a total of five were hospitalized |
| 2012      | Yuen Po Street Bird Garden (bird market) | • 62-year-old male with chronic diseases (diabetes, hypertension, gout and renal impairment) frequently visited bird market and purchased two parrots before the onset of symptoms.  
• The parrots could not be tested or traced as the man’s son released them. |
| January 2018 | Yuen Po Street Bird Garden (bird market) | • A married couple (57-year-old woman and 54-year-old man) contracted the disease having visited the bird market twice in a month, and purchased a parrot from a shop there.  
• The woman required treatment in the intensive care unit. |

#### Table 10
**Cases of Avian Influenza Linked with Pet Bird Trade in Hong Kong**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location attributed to disease acquisition</th>
<th>Additional Information</th>
</tr>
</thead>
</table>
| July 2015 | Yuen Po Street Bird Garden (bird market) | • H5N1 was detected on a swab sample collected from a bird cage holding an Oriental magpie robin.  
• The market was closed for 21 days for monitoring and disinfection. |
| April 2016 | Yuen Po Street Bird Garden (bird market) | • H5N6 was detected on a swab sample taken from a Hill myna in a bird cage.  
• All 2,834 birds of the shop were removed and sent to AFCBD Animal Management Centre for disposal.  
• The market was closed for 21 days for monitoring and disinfection. |
6.3.2 Injuries and Envenomation

Exotic species are, for the most part, wild animals that are not domesticated and, even if captive-bred, are likely to retain much of their natural behaviour (Section 5). In captivity, animals may bite, scratch, kick or envenomate handlers, often while trying to evade restraint due to fear or as part of their territorial defence.

Although fatal cases are rare, the risk of serious injury and death in keeping dangerous and venomous species in overseas jurisdictions is not inconsiderable. While research into this issue has been conducted overseas, little research has been undertaken in Hong Kong, despite the city’s sizeable exotic pet trade.

Importantly, according to research in other jurisdictions, the large variety of exotic species available in the trade creates a challenge to the treatment of envenomation and injuries due to the limited supplies and variety of antivenom, as well as the general lack of knowledge in the medical profession for correctly identifying the species of animal that inflicted the wound by both patient and physician. Medical treatment of wounds can be challenging due to the diverse array of normal microbial flora and unusual pathogens associated with different species of animals and trade conditions.

The only local retrospective study identified, regarding injuries and envenomation by exotic species in private households, was a paper published in 2018 in the Hong Kong Medical Journal. Of the 15 cases of injuries and envenomation by exotic pets that had been reported to the Hong Kong Poison Information Centre (2008-2017), three were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Within these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite. Withen these, nine cases involved consultation with the Hong Kong Poison Information Centre (2008-2017), six cases were of snake bites, four of fish sting, two of scorpion sting, and one was a case of turtle bite.

Notably, in Hong Kong there are no specific regulations preventing a PPD from possessing venomous species, although they cannot be purchased as pets (Part II: Section 5).

References (Part I)

4. d) FEDAP recorded 516,000 dog bites, 285,000,000 small mammals and 9,424,000 reptiles were owned by Europeans. A further 11,540,000 aquatic species were also owned. (Source: FEDAP (2019) European Facts & Figures 2019. Available at: https://fedap.org/images/FEDAP_facts_and_figs_2019.pdf [Accessed 10 June 2021].)
5. e) According to the Chinese Pet Industry 2019 white paper, 9,7 million birds, 7 million reptiles and 7 million rodents were owned by Chinese citizens. A further 84 million fish were also owned. (Source: Flanders Investment & Trade (2020) The Pet Food Market in China Flanders Investment & Trade Market Survey. Available at: https://www.flandersinvestmenttrade.com/export/sites/trade/tradefiles/markt_studies/Th%20part%20food%20market%20China.pdf [Accessed 10 June 2021].)
6. f) According to the APPA National Pet Owners Survey, 5.7 million birds, 5.4 million small animals and 4.5 million reptiles were owned by Americans. A further 131 million freshwater fish and 16 saltwater fish were also owned. (Source: American Pet Products Association (2020) Pet Industry Market Size, Trends & Ownership Statistics. Available at: https://www.americanpetproducts.com/press_industrytrends.asp [Accessed 10 June 2021].)
7. g) According to the APF, there were 15,000 hamsters & 7,000 rabbits, as well as 27,300 turtles & tortoises, 51,800 birds, 50,500 small mammals (comprising 38,300 hamsters & 12,000 rabbits), as well as 21,300 other animals (excluding cats and dogs). (Source: FEDIAF (2016) European Aquaria: the growth phenomenon behind the new generation of Wild Tortoises and Freshwater Turtles Across the World and Threatened Species. Available at: https://www.fediaf.org/images/European_Aquaria_European_Aquaria_Aquaria species were also owned. (Source: FEDAP (2019) European Facts & Figures 2019. Available at: https://fedap.org/images/FEDAP_facts_and_figs_2019.pdf [Accessed 10 June 2021].)
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20 Despite AFCDD records for the imports of 916 live CITES-regulated seahorses between 2015-2019, there is no specific record available from the CSBD, indicating that the HS Commodity Code was not used during their importation. Swinhoe (1865) CITES Trade Database. Available at: https://tradecites.org [Accessed 2 June 2021].


42 a) Reading, M. (2020) Under the Food and Hygiene Regulation, Cap 139D, no person who carries on the food business which involves the sale of fresh, chilled or frozen reptiles (including live reptiles) must obtain a fresh provision shop license from the Food and Environmental Hygiene Department.

43 Goldthread (2020) Hong Kong’s Snake Queen Catches and Makes Snake Soup. YouTube. Available at: https://www.youtube.com/watch?v=wCWVClMq80M [Accessed 2 September 2021].

44 a) KFBR (2021) Personal Communication.


46 Goldthread (2020) Hong Kong’s Snake Queen Catches and Makes Snake Soup. YouTube. Available at: https://www.youtube.com/watch?v=wCWVClMq80M [Accessed 2 September 2021].

47 Goldthread (2021) Hong Kong’s Snake Queen catches and Makes Snake Soup. YouTube. Available at: https://www.youtube.com/watch?v=cKm5mMq4XJo [Accessed 26 August 2021].

48 a) KFBR (2021) Personal Communication.


50 Devernay (or venom surgery) /a surgical procedure to remove the venom glands. Although this procedure, where carried out by veterinary surgeons, is performed under general anaesthesia and is relatively safe. Available at https://www.cbd.int/doc/1977/annexes/003342c9450e5e6406b9c75b1125a20.pdf [Accessed 2 September 2021].

51 Devotion to venom surgery /a surgical procedure to remove the venom glands. Although this procedure, where carried out by veterinary surgeons, is performed under general anaesthesia and is relatively safe. Available at https://www.cbd.int/doc/1977/annexes/003342c9450e5e6406b9c75b1125a20.pdf [Accessed 2 September 2021].

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1) Repeated postings, where the same specimens were recurrently advertised by the same users, were noted to prevent double counting and overestimation; this eliminated an otherwise 46.8% overestimation of actual volume. Based on observed posts alone, 661 chelonians were advertised, but this number reduces to 445 when accounting for such repeated postings.

2) “Additional” numbers in 2017 and 34 in 2018 were issued for traders selling a mixture of small mammals (excluding cats and dogs), reptiles and birds. It is unclear how many may have been licensed to trade more than one category.


6) ACCO (2020) Two Clicks Away: Wildlife on Facebook. Available at: www.facebook.com/wildlifesalesonfacebook


8) As of 1986, having been impacted by chytrid and captured for the pet trade.


10) By under-regulated global trade.

11) Petes plus Petes 95%.

12) The Pass stubfoot toad (Atelopus senex) was assessed to be extinct as of 1986, having been impacted by chytrid and captured for the pet trade.


14) By under-regulated global trade.


17) The Paradise parrot (Psephotellus pulcherrimus) was assessed to be extinct as of 1994, having been impacted by chytrid and captured for the pet trade (Source: BirdLife International (2016) Psephotellus pulcherrimus. The IUCN Red List of Threatened Species. Version 2016.2. Available at: http://www.iucnredlist.org/species/22685518/30701054)

18) The Pass stubfoot toad (Atelopus senex) was assessed to be extinct as of 1986, having been impacted by chytrid and captured for the pet trade.

19) The Paradise parrot (Psephotellus pulcherrimus) was assessed to be extinct as of 1994, having been impacted by chytrid and captured for the pet trade.

20) The Paradise parrot (Psephotellus pulcherrimus) was assessed to be extinct as of 1994, having been impacted by chytrid and captured for the pet trade.

199 Ibid


204 Ibid


223 Golawka, O. et al. (2019) ‘Complex bacterial flora of imported pet tortoises kept during quarantine: Another zoonotic threat?’, Comparative Immunology, Microbiology and Infectious Diseases, 65, pp. 94–100.


Part II

Regulatory Review

1 Introduction

Hong Kong’s animal trading and welfare laws have been reviewed by legal scholars and academics dating back to 1975. These reviews identified weaknesses and loopholes that still exist today. The following section provides an overview of the laws that regulate the exotic pet trade in Hong Kong, reflects on the concerns raised in previous work and identifies emerging issues resulting from the dramatic increase in the trade and exotic pet ownership in recent years. Based on these findings, recommendations for policy reform are provided in Part III of this report.

This section is structured to first highlight key regulations governing and of relevance to the exotic pet trade and the principal agencies responsible for its governance. This is followed by a review of key ordinances. These include regulations that impose controls on imports and exports, prevent and limit the introduction and spread of animal diseases, ensure standards of husbandry and care in the trade, provide safeguards to reduce the ecological impacts of the trade internationally as well as protect local wildlife. Other important aspects, such as enforcement, illegality in the trade and highlights from other jurisdictions, are explored.

2 Regulatory Framework

2.1 Relevant Ordinances

The following ordinances and subsidiary regulations provide the control regime for the trading (import, re-export, export, trade and possession) of animals and birds (including exotic pets) in Hong Kong:

a) the Public Health (Animals and Birds) Ordinance (Cap. 139);

b) the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586);

c) the Prevention of Cruelty to Animals Ordinance (Cap. 169); and

d) the Rabies Ordinance (Cap. 421).

In addition, the following two ordinances, which provide for the protection of Hong Kong’s native species, have some bearing on the capturing of local species for the purpose of trade:

e) the Wild Animals Protection Ordinance (Cap. 170); and

f) the Country Parks Ordinance (Cap. 208).

Furthermore, live animal imports for food are governed by the following ordinance:

g) the Public Health and Municipal Services Ordinance (Cap. 132).

While relevant to the trade in live exotics, Cap. 132 is not examined in any great detail here as it does not explicitly focus on the pet trade.

The key regulations governing the commercial trade are Cap. 139 and Cap. 586. Specifically, Cap. 139 and its subsidiary legislation regulate the import/re-export/export and trading of live animals including exotic pets. Cap. 586 regulates the import/re-export/export, possession and trading of endangered animals (i.e., the implementation of CITES) including exotic pets.

Additional ordinances regulate specific issues, such as rabies, cruelty, or protection of local species. These are highlighted where relevant. In particular, Cap. 170 provides a list of protected wild animals and prohibits the possession, hunting, sale or export of them. The following provides an overview of key requirements and specifications in Cap. 139 and Cap. 586, indicating policy reform and amendments of the ordinances that would be beneficial.

It should be noted that the Prevention of Cruelty to Animals Ordinance (Cap. 169) is currently under government review. As such, policy reforms were formulated and put to public consultation in 2019. Such reforms would apply to the exotic pet trade (Box 1).

The following section provides an overview of the principal government agencies charged with overseeing the trade in live exotic animals and their core areas of responsibility.
The Hong Kong Court of Appeal recently emphasised that cruelty to animals causes not just physical injuries but also psychological pain to the animal, is a serious crime which should not be tolerated in any civilised community, and therefore a deterrent sentence should be imposed for offenders. However, the Court also stated that sentences for cruelty to animals need to be assessed on a case-by-case basis and declined to lay down any sentencing tariff or scale.

Duty of Care to an animal means that a person responsible for the animal must take such steps as are reasonable in the circumstances to ensure its welfare needs are met. The person(s) responsible for the animal include(s) not only the owner, but also someone in charge of, or having custody of the animal, whether permanently or temporarily. The following animal welfare needs (Section 5) should be met to the extent required by good practice:

- **a** the need for suitable nutrition;
- **b** the need for a suitable environment;
- **c** the need to be able to exhibit normal patterns of behaviour (including social needs); and
- **d** the need to be protected from pain, suffering, disease and injury.

The Endangered Species Protection Division (ESPD) monitors and inspects inbound and outbound consignments of CITES-regulated species at control points other than the airport and land control points (which are overseen by the IED, as noted above). It is tasked to ensure validity and compliance with licenses (e.g., Possession Licences (PL)) and permits, verifying transaction records during inspections, etc. The ESPD maintains the Endangered Species Licensing and Enforcement System (ESLES) to track transactions, enforcement actions, etc., relating to CITES-regulated species.

A number of advisory bodies also provide expert advice to the AFCD, including the Endangered Species Advisory Committee (ESAC), Animal Welfare Advisory Group (AWAG), the Appeal Board Panel under the Rabies Ordinance (Cap. 425) and Veterinary Surgeons Board (VSB). Their advice is not legally binding, but may inform relevant policies and regulations. As Hong Kong does not have a CITES Scientific Authority, the ESAC is sometimes consulted instead. Unlike a CITES Scientific Authority, however, the body is not comprised exclusively of scientists, with the membership as of 2020 comprising five academics, five trade representatives, a legal consultant and an NGO representative.
3 Public Health (Animals and Birds) Ordinance (Cap. 139)

3.1 Introduction

The Public Health (Animals and Birds) Ordinance (PHABO) came into operation on 1 January 1936. The Ordinance provides for the quarantine and prevention of disease among animals and birds and covers import, re-export, export, display and domestic trade of live animals and carcasses. It is one of a series of ordinances drafted to deal with public health and based partly on the provisions of the Public Health and Buildings Ordinance, 1903, and partly on Malayan precedents. Its enforcement comes under the purview of the Food and Health Bureau (FHB) and its key pieces of subsidiary legislation are:

- Public Health (Animals and Birds) Regulations (Cap. 139A); and
- Public Health (Animals and Birds) (Trading and Breeding) Regulations (Cap. 139B).

As Cap. 139 comes from a public health perspective, animal welfare has not been a key consideration in most of its provisions. Recent pandemics such as SARS and COVID-19, the significant growth of the exotic animal trade and heightened awareness of public health concerns surrounding animals in captivity (including exotic animals in transit), indicate that the existing approach adopted under the Ordinance should be reviewed and a number of aspects reformed.

3.2 Definition of Animals in Cap. 139

“Animals” are defined in section 2 of Cap. 139 as:

- “cattle, sheep, goats, all other ruminating animals, swine, equines, and all other warm-blooded vertebrates except man and birds, and reptiles”.

Under this definition, some cold-blooded (ectothermic) vertebrates such as amphibians and fish, as well as invertebrates (such as insects, cephalopods, arthropods, corals) are not animals for the purpose of the Ordinance. However, some of the requirements of the Ordinance, such as authorisations to import, are nevertheless applied in practice, for example to amphibians.” (Section 3.4).

In contrast, animals are more widely defined in other legislation pertaining to animal welfare:

- a. The Prevention of Cruelty to Animals Ordinance (Cap. 169) defines animals as “any mammal, bird, reptile, amphibian, fish or any other vertebrate or invertebrate whether wild or tame”;
- b. The Wild Animals Protection Ordinance (Cap. 170) defines animals as “any form of animal life other than fish and marine invertebrate”;
- c. The Animals (Control of Experiments) Ordinance (Cap. 340) defines animals as “a living vertebrate animal”;
- d. The Public Health and Municipal Services Ordinance (Cap. 132) defines animals as including reptiles, but explicitly excludes birds or fish.

Section 2(0) of Cap. 139 defines wild animals as “all animals other than those classed at common law as domestic”; and wild birds as “all birds other than poultry and those kept principally or solely as pets.” The definition of wild animals in Cap. 139 is consistent with that provided in section 2 of the Wild Animals Protection Ordinance (Cap. 170). However, the only provisions in Cap. 139 which touch on the protection of wild animals and wild birds are sections 9A and 9B, which are in relation to protection and safety of the public where wild animals and wild birds are exhibited.

3.3 Notifiable Animal Diseases

Notifiable diseases are listed in the interpretation section of Cap. 139, Cap. 139M (Nipah and Hendra viruses) as well as in a list maintained by AFCD.

The list includes diseases such as ringworm and mange, which arguably do not need to be notifiable and are in all likelihood unlikely to be reported to AFCD. This contrasts to the Centre for Health Protection’s (CHP) list of Statutory Notifiable Diseases (Appendix F), which has a dedicated and readily available webpage, where the list is explicitly and clearly referenced to the First Schedule to the Prevention and Control of Disease Ordinance (Cap. 599).

Further, the CHP list includes animal diseases such as Psittacosis (avian Chlamydiosis), which are not included in the NAD list. Important emerging infectious diseases of conservation concern, such as Chytrid fungus that are responsible for global amphibian population declines/extinctions, also appear to be missing from the NAD list. The list requires review and updating with proper scientific names of diseases.

According to AFCD, the general principle of this animal disease notification is to detect and minimise the spread of important animal diseases among animals for the sake of protection of the animal and public health. However, discussions with multiple veterinary surgeons and veterinary support staff indicate the list is not widely known. For a notifiable list to be useful, it must be frequently advertised, easily accessible with an easy-to-use reporting system and come with protocols set to manage disease transmission.

3.4 Importing, Re-exporting and Exporting Exotics Cap. 139A

Special permits are required to import exotics. Under Regulations 1 and 4(0) of Cap. 139A. No animal or bird which is brought into Hong Kong on board any vessel or aircraft from any place outside Hong Kong may be removed from such vessel or aircraft except under and in accordance with a Special Permit. Notably, an exception is made for animals including birds brought into Hong Kong direct from Mainland China (according to Regulation 4(0) of Cap. 139A).

Application for the Special Permit may be made in a prescribed form. Permits issued will normally be valid for six months and for one consignment only. AFCD has the discretion whether or not to approve an application. The permit terms typically include the requirement for a Health Certificate and any other special conditions based on the suitability of the animal as a pet and risk of disease transmission, e.g., quarantine (Table 1). They also require that the animal(s) “must be transported by the fastest and most direct route from the exporting country/place of origin or through Hong Kong as manifested cargo” and that birds must be transported “by air.” Where animals are not destined for local premises, but onward transport may spend extended periods confined in crates aboard vehicles, raising welfare concerns.
Since amphibians, fish and invertebrates are excluded from the definition of animals under Cap. 139 (Section 2.2), they are excluded from the Special Permit requirement. Instead, amphibians require a “Special Authorisation” to import (which is free). These requests are considered case-by-case, based on the species to be imported. The Special Authorisation is aimed at facilitating customs clearance and is not a statutory requirement. It requires slightly less information than the Special Permit regarding the particulars of the imported animals, i.e., omitting data on age, sex, colour, description and other identifications, but is otherwise very similar to a Special Permit. No such permitting is required to import fish, corals, insects, arthropods or other invertebrates.

**Limited transparency in criteria for approving Special Permits**

Overall, the approval requirements of the Special Permits are unclear. In an answer to Legislative Council Questions dated June 2020, the Secretary for Food and Health Professor Sophia Chan indicated that when considering an application for a Special Permit associated with species of animals new to Hong Kong, the AFCD would conduct assessments covering several factors. These include the animal disease situation of the importing country/place, the suitability of the species to be kept as a pet, protection of public health and safety, as well as potential impact on local biodiversity. These factors are also noted on the AFCD website in the context of imports of reptiles. It is understood that a risk management approach is adopted, but the methodology is not publicly available.

Such parameters do not provide clear guidance for the public to understand the approval mechanism of the Special Permit application. The limited transparency is likely burdensome for the traders and private individuals. Further, such assessments are already being undertaken for any new species in trade, it would take little additional effort for the government to publish its list of pre-screened and approved species, effectively the basis of a “positive list”.

**Mainland China excluded from the Special Permit requirement**

While Hong Kong is a Special Administrative Region of the People’s Republic of China, for the purposes of trade and recordkeeping, local authorities document inbound and outbound consignments between Hong Kong and Mainland China as imports and exports or re-exports respectively. Notably, this contrasts with the treatment of such trades under CITES, wherein the CITES Secretariat treats trades between the Hong Kong SAR, Macao SAR, Mainland China and the Republic of China/Taiwan as internal.

In practice, Regulation 4(3) of Cap. 139A indicates that the Special Permit regime does not apply to animals or birds brought into Hong Kong from Mainland China. However, such animals or birds are not exempt from the health requirements stipulated in the Rabies Ordinance Cap. 421 and Cap. 139 section 7A (Health Certificate Requirement for birds) and Cap. 586 (CITES permit requirement).

Due to this exemption, there is no clear mechanism to address the suitability of animals and birds for import into Hong Kong or to apply conditions on their entry. This represents a gap in the regulatory framework which can be exploited, for example by unscrupulous traders bypassing the need to obtain a Special Permit by routing animals and birds destined for Hong Kong via the Mainland. Health Certificates (see Section 3.4.2) are still required for animals imported from Mainland China, but they should not be relied upon as a regulatory substitute since, in contrast to Special Permits, they cannot be used to stipulate specific conditions on the animals’ entry into Hong Kong such as requiring tests, examinations, etc.

Nevertheless, C&S(D) figures indicate that from 2015-2019, at least 86,600 turtles and tortoises were imported from the Mainland China for uses other than for food, which have not been imported according to the data since 2018. Market surveys indicate, however, that live birds imported as pets from Mainland China are on sale in Hong Kong's markets and shops.

### Table 1 Special Permit Requirements for Exotic Animals

<table>
<thead>
<tr>
<th>Type of animals</th>
<th>Health Certificate required*</th>
<th>Permits (excluding imports from Mainland China)</th>
<th>Quarantine upon arrival</th>
<th>Special arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birds</strong></td>
<td>Yes</td>
<td>For Psittaciformes, additional health requirements apply, including keeping the birds under veterinary supervision for the 48 days prior to shipment.</td>
<td>Permit Terms for Pets Animals (Commercial Consignments)**</td>
<td>All imported birds will be directed to the Airport Animal Hostel (AAH) for custody and sample taking by the AFCD for testing against the Avian influenza virus. The laboratory test will typically take one day during which the birds will remain under custody at the AAH. Post-arrival testing of avian Chlamydiosis may be performed on parrots (Psittaciformes spp.) imported for commercial purposes in consideration of health status, mortality.</td>
</tr>
<tr>
<td>Reptiles, Rodents and Lagomorphs</td>
<td>Yes</td>
<td>For pet turtles, a lab report should also accompany the shipment to certify that the turtles are free from salmonellosis.</td>
<td>Permit Terms for Pets Animals (Commercial Consignments)**</td>
<td>Pet reptiles may be directed to the AAH under official escort for post-arrival testing of Salmonella in response to observation of poor health condition and/or mortalities of animals upon arrival and the validity of animal health documentation. For snakes, if considered necessary, the snakes must be delivered to a designated inspection station for species identification.</td>
</tr>
<tr>
<td>Amphibians</td>
<td>Not applicable</td>
<td>Special Authorisation to import required for amphibians*</td>
<td>Not applicable</td>
<td>• Additional permit required to import a species controlled under CITES.</td>
</tr>
<tr>
<td>Fish</td>
<td>Not applicable**</td>
<td>Not required</td>
<td>Not applicable</td>
<td>• Additional permit required to import a species controlled under CITES.</td>
</tr>
<tr>
<td>Invertebrates</td>
<td>Not applicable</td>
<td>Not required</td>
<td>Not applicable</td>
<td>• Additional permit required to import a species controlled under CITES.</td>
</tr>
</tbody>
</table>

*See Section 3.4.2
**Exception is if they are freshwater species, imported for food from Mainland China, to ensure they are free of malachite green and other harmful substances.
Limited data and traceability
For CITES-listed animals, a level of traceability is provided by the permit and licensing system (Section 4). However, with the exception of dogs and birds, there is no requirement to identify and/or document the source (i.e. wild-caught, captive-bred) of non-CITES animals in trade.

In terms of the overall type and number of exotic animals in trade, the government refers to data maintained by C&SD where imports/exports/re-exports are documented according to the 8-digit Hong Kong Harmonized System (HS) code. However, these data are non-species specific for many animals (see Part I Section 2.2) and thus provide insufficient detail to monitor the trade. Furthermore, reliability of information is not certain since customs declarations need not be lodged until two weeks post-import and therefore cannot be corroborated through physical inspection.

C&SD have records of shipments arriving via indirect routes, e.g., 2,381 snakes arriving from India (in 2007) via a multi-day journey on an ocean-going vessel. Notably, AFCD has not issued a special permit for importing live snakes from India within the past 5 years. It is unclear whether C&SD or C&ED inform AFCD of such anomalies and whether such animals may have entered Hong Kong legally.

Fees for importing exotics low
The Special Permit fee is relatively inexpensive. It varies for different types of animals, and is calculated on the basis of a specific grouping of animals classified as one unit. A list of fees for Special Permits is provided in Schedule 3 of Cap. 139A and can be found at the AFCD website.

Under the current scale, the fee for the first unit ranges from HK$344 (e.g., 200 heads of reptile in one unit) to HK$3,056 (e.g., 50 heads of cattle in one unit). The fee for every additional unit ranges from HK$78 (e.g., reptiles, rodents & lagomorphs) to HK$394 (e.g., cattle, pigs, sheep and goats). Thus, to import 1,000 reptiles for the exotic pet trade, the Special Permit will cost just HK$666 – approximately 65 cents per animal. Amphibians imported under Special Authorisations may be imported without charge. It is of note that the Schedule of fees in Cap. 139A has not been revised since 1996.

Enforcement Against Importing Animals and Birds with Disease is Challenging
Section 4(7) of Cap. 139 prohibits any person from “knowingly” bringing into Hong Kong any animal or bird suffering from disease and section 4(4) makes such conduct a criminal offence.

In terms of enforcement, an offence only occurs if it can be proven that a person knew an animal or bird suffered from disease yet brought it into Hong Kong. While there is no case law on the interpretation of “knowingly” for the specific offence in section 4(7), it is likely that only actual knowledge will suffice. Some traders may argue that they do not know that an animal or bird had a disease, thereby trying to bypass the restriction. Breach of the requirement would be hard to prove.

Further, the “masking phenomenon” (Part I Section 5.2.3) whereby an animal may conceal an illness that may not be detected unless clinically tested, reducing the effectiveness of the “knowing” test.

3.4.2 Health Certificates
Under Regulation 7A of Cap. 139A, a valid Health Certificate issued by a competent veterinary authority in the exporting country is required to accompany the import of the bird into Hong Kong. Schedule 4 of Cap. 139A provides for several requirements in the Health Certificate. The AFCD’s Special Permit terms for the importation or transshipment of pet birds may indicate additional items to be contained in the Health Certificate. According to Schedule 4 and the permit terms, the veterinarian surgeon must have inspected the birds not more than 5 days before departure. The Health Certificate must certify that the bird:

- shows no clinical signs of disease;
- has not been kept at premises where there is serological or virological evidence of H5 or H7 Avian influenza virus infection within 180 days before the Health Certificate was issued;
- was tested negative to a specified diagnostic test for H5 and H7 Avian influenza within 14 days prior to export to Hong Kong;
- has not been kept at premises within 100 km of a reported case of West Nile Virus within 180 days preceding export, or the quarantine facility was mosquito proof and all or a sample of birds was tested negative for West Nile Virus 14 days prior to export;
- has been kept in government quarantine facility for 28 days prior and remained clinically normal during this period; and
- for Parrots (Psittaciformes) only, were kept under vet supervision for 45 days prior to shipment and were either treated against avian Chlamydiosis using specified antibiotics or tested negative for avian Chlamydiosis with a specified diagnostic test.

According to policies implemented by AFCD, the Health Certificate requirement is also generally applicable to the import of other animals, in addition to birds (including those imported from Mainland China) (see Table 1 above).

Health Certificate Challenges
The Health Certificate, which is normally valid for a few days, is not proof of ownership and technically is only of real use when the animal enters Hong Kong. As it states only the reported health of the bird when leaving the exporting country, it cannot provide health status for an animal that has already landed and is exposed to local health conditions. Despite this, bird traders are required to retain copies of Health Certificates for inspection by authorised officers “at all times.”

It can be problematic if the health check in the exporting country is based on distant observation or simple physical examination of animals, because:

- masking phenomena means animals may hide signs of illness, in order to avoid the attention of predators, until they are so sick that they can no longer do so (Part I Section 5.2.3);
- logistically it can be challenging to perform adequate inspection of large batches of animals (e.g., 1,000-2,000 birds are common); and
- the veterinarians issuing the Health Certificate may not have sufficient knowledge of exotic animal and wildlife medicine.

The requirement for birds of the order Psittaciformes to be treated with specified antibiotics prior to import (if not tested negative for the disease) is a cause for concern. Routine prophylactic antibiotic treatment is highly discouraged by experts as it could generate resistant strains of avian Chlamydiosis and other bacteria.

Contributing to enforcement challenges, there is a lack of training of local frontline inspection and enforcement officers. Both legal and veterinary knowledge is required to adequately assess animal health, the adequacy of environmental conditions and quality of care provided to a wide variety of animal species in the trade. Disclosures to LegCo reveal that consignments of more than 1,000-2,000 birds are common in Hong Kong, with up to 3,000 in some instances. As such, it would be challenging for government personnel to conduct thorough inspections and impractical to unload animals for individual checks.
3.4.3 Quarantine/Segregation

Cap. 139A creates a regime by which animal quarantine requirements on arrival depend on the terms of the Special Permit as well as the species and country of export. For dogs and cats, the applicable permit terms depend on the countries where the animals come from, which are classified into three groups.35 Whereas this system is clear, the quarantine requirements and procedures for the import of exotic animals for the pet trade (other than birds) are less well defined and would appear to be determined by:

- presence or absence of a Special Permit;
- compliance with conditions stipulated in the Special Permit;
- observation of poor health/condition of the animal on arrival; and
- whether the animals or birds conveyed are in the same vessel as a diseased animal/bird.

A lack of mandatory veterinary checks and subsequent stringent quarantining of exotic animal arrivals may potentially cause inadvertent import of diseases into Hong Kong. It is noted that there is no mandatory attendance or examination by a veterinary surgeon upon the arrival of the imported animals, unless a problem is observed by the non-veterinary staff on site. As a result, the masking phenomenon of animals, which hides existing illness (Part I: Section 5.2.3), combined with the large numbers in consignments, means that diseases may not be readily detected under the current system.

If the arriving animal(s) is/ are to be quarantined at the Airport Animal Hostel (AAH), it is understood that the owner/importer of the imported/transshipped animals or birds is responsible for authorising a local registered veterinary surgeon for emergency calls if the animals are found to be sick.36 Duty Officers on site may call in an alternative private veterinary surgeon if the appointed veterinary surgeon does not respond to such emergency calls, with the costs to be borne by the owner/importer.

Pet birds arriving into Hong Kong are sent to the AAH, where samples are taken by non-veterinary staff and sent for Avian influenza (AI) testing. Typically, the birds stay for one night at the AAH and are released the next day from quarantine once negative test results are returned.37 Avian Chlamydiosis testing may also be performed for Psittaciformes species as well as for Salmonella in pet turtles on a case-by-case basis, i.e., dependent on health status, animal health documentation, and mortality of animals in the consignment.38

Extension of quarantine period

Where an animal or bird might have been in contact with a diseased animal or bird, Regulation 12 of Cap. 139A gives the Senior Veterinary Officer (SVO) power to detain the animal or bird in quarantine for any period they think proper. Under Regulation 15 of Cap. 139A, in the event of disease appearing among animals or birds in segregation, the SVO has the power to order immediate slaughter of the animals or birds, or to prolong the period of segregation. Unless required by the SVO, there is no other extended quarantine requirement for the many species imported to Hong Kong. However, prolonging segregation likely raises logistical challenges, given the nature of holding facilities.39 It is, for instance, understood that birds are quarantined in the crates they arrive in and that other exotics would be housed in “modified kennels with proper equipment”,40 of which only eight are available41.

3.4.4 Enforcement of Overseas Traders Challenging

Under current practices, overseas traders may nominate a person or agent in Hong Kong to apply for Special Permits on their behalf.42 However, there appears to be little or no additional scrutiny of the overseas traders. This creates a loophole to allow foreign traders to potentially conceal their identity and to evade legal liability in Hong Kong arising out of the importation of animals or related matters.

Local authorities have acknowledged that investigations have been stalled by the inability to hold parties accountable when instructions were received from third parties outside of Hong Kong’s jurisdiction.43 Significant volumes of animals known to be transshipped through Hong Kong to Mainland China, and the challenges faced in bringing prosecutions for smuggling, better oversight practices are required (Part I Section 3 & Part II: Section 7.3).

3.4.5 Penalties

According to Regulation 57 of Cap. 139A, any person who removes an animal or bird from a vessel or aircraft either without or in breach of a Special Permit is liable on summary conviction to a maximum fine of HK$20,000 and may suffer forfeititure of the animals or birds in question. Any person who imports birds without a valid Health Certificate is liable on summary conviction to a fine at HK$25,000 and may also suffer forfeiture. In contrast, smuggling prohibited items may attract a term of imprisonment under Sections 6A and 6C of the Import and Export Ordinance (Cap. 60). Trafficking CITES-listed species also carries heavy penalties (up to 10 years imprisonment) upon conviction under Cap. 586 (PESAPDO).

HK$2,000 for removing an animal or bird from a vessel or aircraft either without, or in breach of, a Special Permit

HK$25,000 for importing birds without a valid Health Certificate

3.5 Trading Exotics, the License Regime Cap. 139B

3.5.1 The Animal Trader License

Any person who sells, or offers to sell, animals or birds, other than those kept by that person as pets or their offspring, is regulated via Cap. 139B and its Animal Trader License (ATL) regime.44 According to Regulation 2 and 5A of Cap. 139B, persons exempt from the ATL regime are: (1) an existing pet owner or his offspring, is regulated via Cap. 139B and its Animal Trader license (ATL) regime; and (2) a person conducting “genuine rehoming activities for animal welfare purposes on a non-profit-making basis”.

Exotic pets such as chinchillas, domestic rabbits, domestic rats, gerbils, guinea pigs, hamsters, lizards, mice, snakes, turtles/tortoises, all birds (except chickens, ducks, geese, pigeons and turkeys) and fish can be sold by licensed animal traders. Unweaned animals cannot be sold pursuant to Regulation 12 of Cap. 139B (Section 7.2). As noted above (Section 3.2), the definition of animals under Cap. 139 and its subsidiary regulations exclude certain types of animal, meaning that traders are not required to have an ATL to sell animals such as amphibians including frogs, newts and salamanders.

Broadly speaking, an ATL is subject to two categories of conditions:

- a statutory minimum conditions: The minimum standards of any primary enclosure, housing facilities and outdoor areas where animals and birds are licensed to be kept, requiring sufficient shelter, food and water, and waste removal facilities to be provided to the animals and birds being kept. In addition, an ATL license must also comply with (b) husbandry and sanitation requirements set out in Regulation 9; and (c) separation requirements for certain animals to be kept separate as set out in Regulation 10.

- b standard additional minimum conditions: In addition to the above statutory conditions, traders of cats, mammals, pet birds and pet reptiles are also subject to Additional Conditions imposed by the Director/Assistant Director of the AFCD pursuant to Regulation 5C (Cap. 139B). These standard Additional Conditions are publicly available, and include vaccination, health record keeping, prevention of escape of animals, husbandry and sanitation conditions that are not covered in the statutory minimum conditions. One of these standard additional conditions is to comply with the Code of Standards for Licensed Animal Traders (except dog traders and dog breeders) (the “Code of Standards”).

Notably, dog traders and breeders have several Codes of Practice (COP) to follow which additionally address necessary competencies, work experience, training of the licensees and staff, etc. There are separate COPs for Animals Traders selling dogs as well as “Category A” and “Category B” Dog Breeders.

3.5.2 Conditions on License

- a standard Additional Conditions on License that applies to animal traders (except dog traders and dog breeders) and specifically includes:

  - a general licence condition requiring the holder to comply with the Code of Standards for Licensed Animal Traders (except dog traders and dogs breeders) (the “Code of Standards”);
Challenges in the COPs and Additional Conditions

The AFCD recently released a COP for Animal Traders selling pet reptiles (“Reptile COP”), to be implemented as of January 2023. This new COP applies many of the standards applicable to the dog trade and addresses many of the insufficiencies that exist in the current regime governing other exotic taxa, such as birds, mammals, amphibians, invertebrates, etc. (Table 2). It nevertheless stipulates practices and requirements at a relatively basic level. While a more comprehensive COP would be advantageous, it is recognised that the Reptile COP as published will likely have a more realistic chance of being implemented effectively by traders, than one of a more onerous (albeit more desirable) nature. Given that the reptile trade is the largest component of the exotic pet trade, the COP is considered a positive development (Section 3.4.2).

Nevertheless, the current minimum Cap. 139B requirements and supplementary conditions are in numerous instances considered to be insufficient to protect the health and welfare of many of the taxa in trade (Table 2).

Long-standing Concerns Remain

As far back as 1975,66 the sufficiency of Hong Kong’s trader licensing conditions were raised as a concern. According to the Conservancy Association:67

“...and...the laws covering this trade are too vague to permit strict enforcement; they call for ‘reasonable space, sufficient light, adequate access to food and water’. None of these are legally enforceable concepts.”

In the last comparative review of animal welfare legislation in 2010,68 a number of problems relating to animal welfare in animal trading were identified in Hong Kong. The authors, Associate Professor Amanda Whitfort and Dr Fiona Woodhouse, recommended:

- a staff qualification and training in pet shops;
- minimum age for sale for different species of animals;
- requirement of veterinary care agreement to ensure sick animals receive appropriate care and veterinary health certification on entry of any animal to pet shops;
- minimum provision of nutrition and basic healthcare requirements;
- enrichment in enclosures;
- minimum age of purchasers of any animals;
- traceability of animals to purchasers in case of abandoned or lost animals; and
- greater space requirements in ATL licensing conditions, and other species-specific requirements.

Further, information on proper advertising of animals for sale is lacking, which is especially concerning with the increasing volume of animals traded online. For dog trading, the ATL number and the microchip number must be displayed in advertisements, including when using online/social media. Some of the recommendations made by Whitfort and Woodhouse in 2010 were addressed in the amendments to Cap. 139B in 2017 (Section 3.5.2 below), but these were limited to dog breeding and trading. The changes made did not apply to animals in the exotic pet trade. As noted above, the Reptile COP will in 2023 bring the trade of this taxa more in line with that of dogs.

Under Regulation 50 (Cap. 139B), an ATL may be cancelled if the licensee is no longer deemed to be a suitable person to hold the license or the condition to the license has been contravened. Under Regulations 5E and 5F of Cap. 139B, in determining whether a person or a body corporate is suitable to hold a license, the Director/Assistant Director of the AFCD may take into account whether that person has been convicted of an offence under Cap. 139 or section 3 of Cap. 169. There are concerns that a convicted trader may re-apply through relatives, friends, lawyers or newly incorporated companies.

Table 2

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Examples of insufficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CODE OF STANDARDS (COS)</strong></td>
<td></td>
</tr>
<tr>
<td>Standards of enclosures</td>
<td>No provision of a minimum enclosure size/space requirement and maximum stocking densities to prevent overcrowding and minimize stress. There is no prevention of crypto-overcrowding, for example by requiring the provision of enough facilities (e.g., perching space, water bowl, basking spot) so that all animals are able to access and use a facility at any given time.</td>
</tr>
<tr>
<td>Considerations to reduce stress</td>
<td>Current omission of requirements to minimise stress, for example there is no provision of a proper photoperiod (the duration of daylight and darkness the animal is exposed to), no consideration of noise and vibration levels, no requirements for partitions to remove visual contacts with other animals, and no provision of hiding places, and other taxa-specific needs.</td>
</tr>
<tr>
<td><strong>ADDITIONAL CONDITIONS APPLICABLE TO PET BIRD TRADERS</strong></td>
<td></td>
</tr>
<tr>
<td>Husbandry requirements</td>
<td></td>
</tr>
<tr>
<td>Current omission of requirements:</td>
<td></td>
</tr>
<tr>
<td>To minimise or prevent heavy metal poisoning (e.g., lead, zinc) where galvanised wire cages and metal toys, etc. are used</td>
<td></td>
</tr>
<tr>
<td>To provide environmental enrichment, including access to clean water for bathing and preening to encourage feather health</td>
<td></td>
</tr>
<tr>
<td>To provide UVB lamps where unfiltered sunlight cannot be provided</td>
<td></td>
</tr>
<tr>
<td>On placement of perches and type of perch, e.g., to provide perches of variable thickness and materials to allow choice and prevent pododermatitis; adequate perching space for all birds in the cage, and perches to be positioned in a way to encourage bird activity (without obstructing normal activity or flight) and prevent droppings from falling onto one another or into food/water bowls</td>
<td></td>
</tr>
<tr>
<td><strong>ADDITIONAL CONDITIONS APPLICABLE TO PET REPTILE TRADERS</strong></td>
<td></td>
</tr>
<tr>
<td>Husbandry requirements</td>
<td></td>
</tr>
<tr>
<td>Current omission of requirements:</td>
<td></td>
</tr>
<tr>
<td>For unfiltered sunlight or UVB lamps, UVB is necessary for the production of Vitamin D and in regulation of calcium metabolism. A lack of these will result in disorders including metabolic bone diseases. Where UVB lamps are used, the irradiance to be measured accurately with a UV Index Meter (e.g., Solarmeter) and replaced regularly as ultraviolet output diminishes with time.</td>
<td></td>
</tr>
<tr>
<td>For species-specific temperature gradient and humidity parameters, Reptiles are endotherms (cold-blooded) and regulate their body temperature by moving around their habitat (e.g., from basking under direct sunlight to seeking shaded spot and underground burrows). Correct temperature range and humidity levels are important for good health and physiological processes. To achieve and ensure a constant adequacy of temperature gradient and humidity levels, adequate enclosure space, hygrometer, and at least two thermometers at each end of the vivarium are required so that accurate measurements and alterations can be made as necessary.</td>
<td></td>
</tr>
<tr>
<td>For good water quality via frequent water quality checks and powerful filter systems/water change (for species that requires an aquatic component). Aquatic turtles produce large amounts of waste products and, in small bodies of water (i.e. small tanks), waste levels (e.g., ammonia and nitrates, etc.) can be exceptionally high. Contaminated water also breeds a multitude of pathogens. These can cause adverse effects to the animals’ health and are a risk to public health (Part I: Section 6).</td>
<td></td>
</tr>
<tr>
<td>For an adequate resting surface/platform for some aquatic terrapins, Many species are semi-aquatic and require both land and water components in their habitats. Platforms that allow easy access to completely dry areas of the enclosure are important for basking purposes (under direct, unfiltered sunlight, or with artificial heat and UVB lamps)</td>
<td></td>
</tr>
</tbody>
</table>

continued on next page
Examples of Insufficiencies of the Requirements Listed Under the Code of Standards and Standard

Additional Conditions Pursuant to Cap. 139B

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Examples of insufficiencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADDITIONAL CONDITIONS APPLICABLE TO PET REPTILE TRADERS</strong>&lt;sup&gt;1)&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>Trading requirements</strong></td>
<td></td>
</tr>
<tr>
<td>The following animals must not be traded or present in the licensed premises at any time:</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Any kind or species of venomous reptile</td>
</tr>
<tr>
<td>2</td>
<td>Any python or boa or similar constricting snake (except Ball pythons)</td>
</tr>
<tr>
<td>3</td>
<td>Any kind of reptile which is large or which is of a kind which may grow to be large</td>
</tr>
<tr>
<td>1</td>
<td>Implementation and enforcement of the condition not to trade or have present “venomous reptiles” is unclear (see Venomous snakes below)</td>
</tr>
<tr>
<td>2</td>
<td>Implementation and enforcement of the condition not to trade or have present “constricting snakes” is unclear</td>
</tr>
<tr>
<td>3</td>
<td>It is unclear what “large” means in this requirement, as no measurements are given. Some of the largest tortoise species (e.g., Aldabrachelys gigantea), African spurred tortoise (Centrochelys sulcata) are frequently sold by pet reptile traders, despite being unsuitable for the average Hong Kong home (see Part I Section 5.3). The incoming Reptile COP indicates that both species are noted to live more than 30 years, with African spurred tortoise over 100 years. In addition, it is noted that prospective owners must be made aware of the adult size and therefore the requirement for large amounts of space. Despite these characteristics, the trade of these animals is not discouraged.</td>
</tr>
<tr>
<td>No potentially dangerous animal may be traded or present in the licensed premises.</td>
<td>It is unclear what makes an animal “potentially dangerous” under these additional conditions to the Code of Standards, as no description is provided. Species regarded as potentially dangerous in literature and by veterinary professionals, such as Snapping turtles, are nevertheless permitted for import in large numbers and regularly sold in reptile shops in Hong Kong. It is also noteworthy that under the ATls, certain venomous species are permitted within Hong Kong, if they are for food. In addition, there are no specific regulations for the selling or keeping of other venomous animals, including invertebrates (e.g., arachnids, scorpions, centipedes) and fish (e.g., stingrays), unless they are scheduled species under Cap. 596, and even then, these regulations do not relate to limiting potential danger to owners or other members of the public.</td>
</tr>
<tr>
<td>Potentially dangerous (e.g., aggressive, large, and/or venomous species) and their unsuitability as pets are discussed further in Part I Sections 5.3 &amp; 6.3.</td>
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</tr>
</tbody>
</table>

**ADDITIONAL CONDITIONS APPLICABLE TO FOOD REPTILE TRADERS**<sup>2)</sup>

Venomous snakes in the Food Reptile Trade

The local trade in venomous snakes involves species capable of delivering lethal and debilitating injuries if kept improperly, as such reptiles are not allowed to be traded as pets. However, they are traded for food. Traders need to maintain both an ATL overseen by AFCD and additional licenses regarding food safety overseen by FEHD (Part I Box 4).

According to the AFCD's Additional Conditions for Food Reptile Traders, only five species/families of venomous snakes (comprising cobras, kraits and sea snakes)<sup>31</sup> are permitted to be kept on licensed premises for food. Other venomous species may only be kept on licensed premises with the written approval of the Director of the AFCD.

It remains unclear how many venomous food snakes are in trade across the 16 premises licensed to sell them as of October 2021<sup>32</sup> However, there are no restrictions on food traders seeking to breed them.<sup>33</sup>

Note: These insufficiencies will be mostly addressed by the incoming 2023 Reptile COP (refer to Section 3.4.2), however, improvements in some areas are still required (see Appendix I).

**3.5.2 Plugging Loopholes While Gaps Remain**

In recent years, the government has recognised and tried to plug loopholes in the animal trading regulation regime, but gaps remain, particularly in relation to the trade of exotic animals.

**Requirement that animals on sale be from approved sources not applicable across the board**

In June 2007, in response to Avian influenza, AFCD amended licensing conditions to stipulate that all birds sold by animal traders had to be from approved sources.<sup>34</sup> Prior to this, there were no specific sourcing requirements for traders of exotic animals (see Sections 3.4.2 & 7.5).

In 2010, additional licensing conditions were imposed on pet traders selling dogs to address the concern that dogs from unknown sources could result in animal health and welfare issues, as well as an increased public health risk in relation to zoonotic diseases (notably rabies).<sup>35</sup> These additional conditions tightened control over the sources of dogs offered for sale and stipulated that pet traders could only obtain dogs from approved sources. In 2022, the government introduced the Reptile COP, but no sourcing conditions were included.

**Exploitation by commercial breeders and traders of exemption for private pet owners**

In 2012, the government prepared a consultation paper addressing the findings of Whitford and Woodhouse’s 2010 Review of Animal Welfare Legislation in Hong Kong. This included findings that most dogs in trade were sourced from unlicensed breeders who were permitted to sell their animals as “hobby breeders” and therefore evaded licensing controls on housing facilities, hygiene of the premises and the health status of the breeding dogs.

In 2017, this hobby breeder exemption was addressed, but only in relation to dogs. After the reform, should a private pet owner (PPO) wish to sell a dog without a license, a one-off permit must be obtained under Regulation 5H of Cap. 138B. By contrast, an exotic pet owner is not bound by such explicit restrictions on breeding or selling. The Government has stated that it intended to “start with dogs”, and that it “may consider extending this policy change to other animals gradually based on needs and other related circumstances.”

Credit: Paul Hilton/Earth Tree Images

Gracilla religiosa

Excremental images
**Protection of Endangered Species Ordinance (Cap. 586)**

### 4.1 The PESAPo Licensing Regime


The purpose of CITES is to regulate international trade in species potentially detrimental to their survival. Signatory states are required to provide varying degrees of protection depending on the status of particular species. Under the treaty, regulated species are listed on one of three appendices:

- **Appendix I:** Those threatened with extinction;
- **Appendix II:** Those that could face extinction if their trade is not controlled; and
- **Appendix III:** Those facing over-exploitation in a particular country.

Cap. 586 stipulates restrictions of import, export and re-export of CITES appendix species (Table 3). These restrictions are documented in sections of the Ordinance (Part 2 - Appendix I species; Part 3 - Appendix II and III species). Part 5 of the Ordinance addresses requirement for licenses, which must be issued by AFCD in advance of the import, introduction from the sea, export, re-export or possession of specimens of a scheduled species, whether alive, dead, its parts or derivatives (including medicines).

Cap. 586 also specifies the circumstances under which a license is not required for trade in endangered species (for example, there is no need for import license for Appendix II captive-bred and III species and where the article is for personal use) (see Section 4.3.2).

In August 2021, certain offences under Cap. 586 were added to the Organized and Serious Crimes Ordinance (Cap. 455, OSCO) Schedule 1. This amendment was intended to provide law enforcement with greater investigative powers, enable confiscation of the proceeds of wildlife crime and combat money laundering in the context of wildlife crimes.

#### Table 3

<table>
<thead>
<tr>
<th>Control Regime for Import, Re-Export, Export and Possession of Live CITES-listed Species (Cap. 586)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appendix I</strong></td>
</tr>
<tr>
<td>Wild origin</td>
</tr>
<tr>
<td>Import, Re-Export, Export requirements</td>
</tr>
<tr>
<td>(As for live Appendix II specimens of wild origin)</td>
</tr>
<tr>
<td>Possession requirements</td>
</tr>
</tbody>
</table>

*Note: All import, introduction-from-the-sea, export and re-export shipments of scheduled species, whether or not a license is required, must be inspected by an authorised officer upon landing in Hong Kong or prior to export/re-export.*

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**The new Code of Practice (COP) for Pet Reptile Traders**

The Reptile COP was published in January 2022, and is scheduled to come into effect on the 1st January 2023. Modelled on elements of the COP for Dog Traders and Breeders (the latest amendments made in 2017), the document was first discussed by the consultative Animal Welfare Advisory Group (AWAG) in 2016. In summary, the COP will require all current licensed traders, new license applicants and future applicants to modify facilities in their premises to fulfil the new standards and conditions detailed in the COP.

This is a welcome document that provides for the improvement of conditions of reptiles in trade, as long as it is enforced effectively. It addresses many of the concerns that have been long highlighted by local researchers, conservationists, welfare advocates, NGOs and veterinary personnel alike.

First and foremost, it definitively applies a strict standard for the duty of care (Box 1) to be provided by animal trader to pet reptiles in their charge, a vital measure in keeping pet reptiles in trade healthy and suitably cared for. Practices which have been tolerated (e.g., use of buckets or bowls to display reptiles) will no longer be considered acceptable.

Nevertheless, the COP presents a minimum standard, rather than the ideal or best practices. There are a number of areas that can be considered for strengthening prior to its implementation in 2023. Comments and recommendations for improvement are listed in Appendix I.

**Unclear definition of private pet owners**

If a private individual breeds and trades significant numbers of offspring of exotic pets he owns or claims to own, it is unclear when he ceases to be a PPO and becomes a trader requiring an ATL. It remains unclear what is determined as “constant” selling (e.g., once per week, per month, quarterly).

**Unregulated possession (by PPOs) of species prohibited from import and trade**

There are a number of popular pet species that remain common in private pet ownership, despite AFCD indications that a PPO who is selling “constantly” would be required to obtain an ATL. However, it remains unclear what is determined as “constant” selling (e.g., once per week, per month, quarterly).

**PART II - REGULATORY REVIEW**
A complete review of the sufficiency of Cap. 586, including a country comparative analysis, was published in 2020 by Whitfort et al. This review highlighted the following key areas of concern, related to the exotic pet trade:

- problems with traceability including the insufficiency of permit documents and trader record keeping requirements;
- issues with determinations of suitability of species in trade;
- opportunities for laundering and weaknesses in the Possession License (PL) regime; and
- inadequate public education.

The review also focused on the organised and serious nature of wildlife-related crimes, which govern the government sought to address with the amendment to Cap. 455 (OSCO) in 2021. The organised nature of wildlife crime is also explored through the Trading in Extinction report series.

Under Article VIII paragraph 3 of CITES, countries may designate ports of entry and exit, and create a detailed record of trade in specimens of listed species. Certain exceptions are provided under CITES, including specimens that are transshipped while under customs authorities’ control. A license is also necessary for import or export between Hong Kong and Mainland China, which has its own CITES Management Authority. The issuance of licenses and permits in respect of endangered species generally takes two working days.

With the exception of some animals (including livestock and birds to be slaughtered for food), there are no dedicated port(s) of entry for CITES-species including live animals in Hong Kong. The regulations on landing place or points of entry contained in Cap. 139A (Schedules 2, 5 and 6) are applicable only to those animals and birds brought into Hong Kong for the purpose of being slaughtered for food. Nevertheless, since birds (excluding those imported from Mainland China) must arrive by air (Section 3.3.1 above), their entry point would by default be Hong Kong International Airport (HKG).

It is understood that other imported exotics, however, may arrive and exit at any of Hong Kong’s dozens of exit and entry points so long as they are accompanied by the requisite documents. Notably, conditions specifying a port of entry may be included in the Special Permit.

4.3 Possession Licenses Needed, but Currently Unfit for Purpose

4.3.1 The Possession License

Once imported, in order to possess a live Appendix II CITES-listed animal of wild origin or a live captive-bred animal, a PL must be obtained from AFCD. Once the animal is sold to a PPO, however, a PL is not required.

The intention of the PL was explained in the Explanatory Memorandum to the Animals & Birds (Restriction of Importation & Possession) Bill in 1969:

“The purpose of this legislation is to regulate the importation and possession of scheduled animals and birds by means of a licensing system in order to prevent the possibility of an undesirable trade developing through Hong Kong which would further contribute to the dangers of extinction. The legislation is thus largely preventative in nature.”

The PL requirement was originally proposed as part of the Bill, which was passed and then came into force as Cap. 187 in 1976. The PLs were then valid for two years, however, when Cap. 187 was repealed in favour of Cap. 586 in 2006, the validity period was extended to 5 years “to reduce the burden on the licensees even further.” Each PL may cover one or more species, is valid for one keeping premises only and will specify the number of animals.

4.3.2 Inherent Problems with the Current Possession License Regime

The quota system impedes traceability, enforcement and effectiveness. According to AFCD’s Endangered Species Protection Division (ESPFD), the numbers of animals under a PL is currently interpreted as a quota, denoting the maximum that may be kept at any one time over the license period of 5 years. Thus, if fifty animals are specified in a license, the number at the premises at any one time must not exceed fifty. As animals are sold, the numbers can be constantly replenished up to the maximum of fifty. The maximum, however, cannot be exceeded and if this happens, penalties and confiscation of the excess animals may occur. Even a single PL with a quota of fifty could therefore allow the trade of tens of thousands of animals. Eleven PLs were in effect, as of January 2021, that allowed anywhere between 56 and 500 animals per license.

As the PLs are only required for captive-bred Appendix I species and wild origin Appendix II species, enforcement is problematic. Due to the difficulties in distinguishing wild from captive-bred species (Part I: Section 4.5), wild-caught Appendix II species can readily be passed off as captive-bred animals that do not need licenses.

As currently enforced, it is not generally possible to know which individual animal is tied to which license. This loophole means that animals can readily be traded illegally, using the quota as a cover for mismatching numbers.

It should be noted that Appendix I species in trade (all captive-bred), however, are reportedly tagged/marked with unique numbers, so long as they are accompanied by the requisite documents. Notably, conditions specifying a port of entry may be included in the Special Permit.

Reliance on honest paper work

Where suspicious trading activity has been detected during AFCD inspections, e.g., PL quotas found to be at the maximum persistently (suggesting no sales) or numbers exceed the quota (potentially illegal restocking), traders have made unrealistic claims. For instance, that animals (such as birds) had escaped previously but returned coincidentally prior to the inspection, thereby increasing numbers beyond the quota. The term “shuffling” has been used to describe activities in the trade whereby traders move animals amongst themselves, to ensure numbers in premises are in accordance with PL requirements.
The number of animals allowed under a PL is monitored via transaction records maintained by the animal trader (including sales, exchanges and transfers, births, deaths, etc). These documents are required to be produced at the request of AFCD during inspections, at which time the officers will review and endorse the record. Transaction records are maintained exclusively by the trader, who keeps the original on site. Ahead of inspections, a trader may be requested to submit a photo or copy of the records to the department, though this is not understood to be standard. However, there is much reliance on honest paperwork which may be exploited by unscrupulous traders.

In some cases, it is suspected that traders provide false sales and breeding data during procedural updates to AFCD. For instance, traders may not update the actual number of animals bred and sold under their PL quota and, as captive bred Appendix II species is not required to be under a PL, an excess of a quota can be claimed as offspring. Birds form an exception: the ATL Additional Conditions require evidence that a bird kept in the licensed premises is from one of three approved sources.

**Potential laundering**

In relation to enforcement of Cap. 586, the ESPD indicated that its current practice is to conduct surprise inspections. There are two forms, that of “routine shop inspections” and “inspection-cum-education visits”. The former is mainly aimed at detecting potential violations of Cap. 586, whereas the latter serves an additional purpose of educating shop owners on the provisions of Cap. 586 and is tailored to factors such as seasonal trade patterns or in response to complaints. Inspections under Cap. 586 by ESPD are conducted separately from those to enforce Cap. 139 or Cap. 169 by AMD (Section 7.2).

Because there is no traceability of specimens under the PL, the system is known to facilitate laundering (as in the cases illustrated above and of Humphead wrasse in Box 2).

**Box 2**

**The Case of the Humphead Wrasse**

Although not usually supplied as pets, the trade in Humphead wrasses highlights the weakness of the PL system in its current form.

Between 2014 and 2016, 434 Humphead wrasses were imported into Hong Kong, according to AFCD data. Despite strict regional export quotas of just 2,000 individuals per year in source countries, surveys of the local retail market identified several thousand of these fish for sale, suggesting the presence of illegal imports.

Having arrived in local markets, the species has a turnaround time of less than 3-4 weeks in restaurants and shops (and often much shorter). The PL, however, is valid for 5 years. Fish imported by premises with a valid PL are not individually tagged and as such it is impossible for enforcement officers to know whether the animal has been legally imported or is one of the many illegal specimens on sale.

The AFCD has recognised that identification of CITES-regulated animals can be a problem and has stated that it will keep a close eye on possible labelling or marking methods to enhance the traceability of individual specimens of other commonly possessed scheduled species. Positively, the AFCD has supported the development (with the University of Hong Kong) of internationally-commended facial recognition technology to improve regulation of the trade in the Humphead wrasse.

In the 1970s, it was the practice for animal traders to maintain logbooks for all exotics entering their premises, explicitly including birds, mammals, reptiles and amphibians. Logs were required to include species, date of sale, death, etc. While still prone to manipulation by unscrupulous traders, this measure provided a minimal safeguard for recording transactions in all listed taxa, not just CITES-regulated species.

**Omission of captive-bred species**

No license is required for possession of a captive-bred Appendix II species if it can be proved by documentary evidence that the animal is indeed bred in captivity. Distinguishing captive-bred from wild species, however, is extremely challenging and may not be possible without sampling and scientific tests like stable isotope analysis (Part I: Section 4.5.3).

**Private Pet Owners exempt from requirement for Possession License**

Since the buyer (ie. PPO) does not need a PL, they may have no idea of the endangered status of the animals they purchase. While PPOs are supposed to obtain and keep a receipt or other form of documentation showing the chain of transactions from the original importer for the CITES-listed animal purchased, many are not made aware of this requirement at the time of the sale.

Proof of purchase is needed should the PPO wish to ship the animal out of Hong Kong and apply for a CITES re-export permit. Considering the longevity of many exotic pets in trade, it is entirely possible that this could happen, e.g., in the case of the owner relocating. There are numerous cases where the AFCD/ pet owner could not relocate stores that have sold animals to be shipped (e.g., at least 24 licensed animal trading premises closed down since 2017) and it is then solely at the discretion of AFCD Director to decide on permitting re-export.

It is, however, reportedly uncommon for export or re-export applications to be made by PPO’s. However, in the event that applications are made, if proof of sale cannot be provided nor the original shop found, the AFCD may permit the export/re-export, indicating the source as “Unknown”, though this is dependent on confirmation that the receiving jurisdiction will accept it and the export is not for commercial purposes.

**Quick and cheap**

Normally, only two working days are required for processing an application for a PL and the prescribed fee for the license is HK$160, making them cheap and quick to obtain. Before a PL can be issued, however, the ESPD will conduct an inspection of the premises.

**Verification challenges**

Following a review of the species licensed under the PL system, it was evident that some short-lived species have not been imported for many years, yet remain permitted under current licenses. This suggests that traders may have been unnecessarily renewing licenses (Box 3).
Problems with Possession Licences – The Case of Java Sparrows

Native to Java, Bali and Bawean in Indonesia, the Java sparrow (Padda oryzivora) is an ‘Endangered’ species, according to the International Union for Conservation of Nature (IUCN), and its international trade has been regulated under CITES Appendix II since 1997.

Records of PLs in Hong Kong indicate that as of January 2021, four licensees were permitted to hold up to 168 individuals combined, over a period of 5 years. However, there are no records of Java sparrow imports into Hong Kong for more than twenty years. It is unclear why these permits have been extended, for the following reasons:

1. It is not possible that any of the original stock from twenty years ago remain, since the species typically survives 2-3 years in captivity (up to a maximum of 9 years).
2. With no imports for two decades, it would follow that any stock in local shops have been bred locally and would thus fall outside of the PL requirements – as Appendix II captive-bred animals.
3. In applying for a renewal or extension of a PL, AFCD officers must conduct an inspection and confirm that the licensed animals are indeed still at the premises or that there is a shipment imminently inbound.

It is unclear why the department and the traders involved have continued to renew these permits, as the incurred fees appear unnecessary and it does not appear the conditions for extension/renewal are being met. However, it may be an oversight and consequence of renewals of multi-species PLs issued many years ago and regularly extended without revision.

The only other sources for such species are through local capture and the illegal trade. There are extant populations of Java sparrows in Hong Kong and the species was trafficked into Hong Kong, as recently as February 2019.

4.4 Captive-bred and Captive Breeding

As noted in Table 4, captive-bred species are currently subject to less stringent trading requirements than species of wild origin.

The persistent challenge in enforcement is being able to distinguish captive-bred animals from animals of wild origin. Methods such as stable isotope analysis can aid efforts to identify wild-caught animals. The constraints on verifying wild-sourced individuals provides the opportunity to circumvent the regulations, by passing off wild-caught individuals as captive-bred (Section 4.3.2 above).

Furthermore, ranched specimens are defined in the CITES Trade Database as animals, taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood, and reared in a controlled environment (Part I: Section 4.5). Since “ranching” is not defined in Cap. 586 and ranched animals have been wild-harvested before being grown out, there is no legitimate reason to exclude them from the PL system described above.

If a trader in Hong Kong wishes to engage in captive-breeding of a CITES-listed animal, they are “encouraged” by the government to keep proper records and submit to AFCD the number and species of animals kept before and post-breeding as well as evidence of legal source of parental stock. Copies of these documents must be provided to an authorised officer upon request. There is an apparent mismatch between the requirement to produce such materials when requested but no binding requirement to maintain them, creating issues for enforcement and exporters alike (Section 4.3.2 above).

4.5 Penalties

Following amendments to the penalties enforceable under Cap. 586 in May 2018, importing, re-exporting, exporting or possessing a CITES-listed species without the relevant permits/license is a serious offense and carries with it a maximum penalty of HK$10,000,000 and 10 years imprisonment, according to provisions in Parts 2 and 3 of Cap. 586.

According to Section 23(5) of Cap. 586, any breach of a license condition is also an offense and the licensee is liable on conviction to a maximum fine of HK$50,000.
Private Pet Owners

There is limited regulation governing the possession of exotic pets once purchased by PPOs, regardless of whether the animals are captive-bred or wild, or whether they are CITES or non-CITES species.

Once an exotic animal has been purchased, a PPO is free to breed the animal without any oversight and will only face scrutiny in instances where cruelty or illegal trade are reported to local authorities. As was demonstrated almost a decade ago in the dog trade (Section 3.5), the exclusion of PPOs from any requirements allowed PPOs to collaborate with ATL holders to breed animals at commercial scales and sell offspring to and through licensed traders, undermining the regulatory system.

There is no minimum age for being eligible to purchase an exotic pet. This contrasts with the requirement that a person must be 16 years old to purchase a dog as stipulated in Cap. 139B Section 4B. Given the specific and often complex husbandry and care requirements of many exotic pet species, at least a similar age limit on the purchase of exotic pets would appear appropriate.

Private pet owners are also not necessarily provided with specific information about the exotic animals (relevant both to the purchaser and animal’s health and including the conservation status of CITES-listed animals), or the legitimacy of the trader, particularly when sales are conducted online (Part I: Section 3.5). This is in contrast to the license conditions for traders permitted to sell dogs which stipulate the documents to be provided to the purchaser, including invoice/receipt, vaccination records, etc.

There are also not mandated to provide receipts or documentation to private buyers for the animals under Cap. 139 or its regulations, which can be problematic should a PPO later wish to export or re-export a CITES animal (Section 4.3). Upon the implementation of the Reptile COP, traders will be required to provide PPOs with original receipts or invoices for the sale with an indication of the species. If the animal is a CITES-listed species, further documentation on the relevant guidance to comply with Cap. 588 must also be provided.

6 Protecting Hong Kong’s Wildlife, Cap. 170 and Cap. 208

6.1 Controls to Protect Wild Local Species

Enacted in 1976, the Wild Animals Protection Ordinance (WAPO) (Cap. 170) provides for the protection of wild animals from hunting threats. Protected animals are those listed in Schedule 2 of the Ordinance and hunting, possession and trade of such animals is an offence unless a special permit has been obtained. However, the exclusion of some native species from protection is a concern, and there have been calls for an update of the legislation and list of protected species. e.g., Burmese pythons (Python molurus bivittatus) are currently the only snake species protected under Cap. 170.

It should be noted that according to Action 14 of the Hong Kong Biodiversity Strategy and Action Plan (BSAP), AFCDO is compiling a List of Threatened Species (LTS) for Hong Kong to guide conservation actions. The LTS is primarily intended to identify the species that are at high risk of local extinction.

The Country Parks Ordinance and its subsidiary regulation the Country Parks and Special Areas Regulation (Cap. 208) were also enacted in 1976. Section 26(1)(a) of Cap. 208 protects against hunting or trapping of wildlife in a country park. Specifically, the Chief Executive in Council may make regulations to provide for:

- prohibiting or restricting the killing, hunting, trapping, molesting or disturbance of any form of wild life within a country park or special area, the taking of, destruction of or interference with vegetation within a country park or special area or the doing of anything therein which will interfere with the soil;

Regulation 6 of Cap. 208A explicitly prohibits carrying hunting or trapping appliances or arms (as defined in Cap. 170A) within a country park without a written permit granted by the Country and Marine Parks Authority. However, if a wild animal that is not “protected” under Cap. 170 strays from a country park, it would appear that there is nothing to stop it being taken and traded as a pet or food. Nearly 40 species of non-venomous and non-constrictor snakes, 21 species of amphibians, all 25 species of lizards, etc. may fall outside such protections. Local animals observed in Hong Kong’s pet trade include Blue-tailed, Waterside and Chinese skinks, as well as Changeable and Grass lizards, all on sale in Tung Choi Street.

The sale of such wild animals into the pet trade is fraught with problems including managing untamed species, harm caused by and to the animal as well as animal and public health disease risks. Following the COVID-19 pandemic and its suspected origin from wildlife markets, countries including China, Vietnam, Singapore have expanded controls on the consumption of wild animals.

The heaviest penalty for contravention of provisions of Cap. 170 is a maximum fine of HK$100,000 and imprisonment for one year.

Any person who contravenes Regulation 6 of Cap. 208A is liable to a fine at level 1 (HK$2,000) and to imprisonment for 3 months and, where the offence is a continuing offence, an additional fine of HK$100 for each day during which the offence has continued.
7 Enforcement and Illegality

7.1 A Siloed Approach

There is limited coordination between government divisions in the oversight of the trade in live exotics. For example, inspections of pet traders for potential breaches and in response to complaints are conducted separately by either AMD or ESPD, depending on the nature of the infraction (Sections 7.2.1 and 7.3.1).

Across departments, there is similarly a lack of coordination in the regulation of live exotic animals. For instance, AMD under the AFCD oversees aspects of licensing as well as breeding, welfare and biosurveillance of the trade of live exotic animals for food. FEHD oversees the licensing of the premises and food safety of the animal after slaughter and environmental hygiene of the premises. However, neither provide oversight or guidance on the means or humaneness of slaughter of exotic animals. Positively, AFCD are developing a slaughter code for wet markets.

7.1.2 Enforcement Across Ordinances

During prosecutions, it is uncommon for charges to be brought under multiple ordinances, even when relevant and appropriate. It is particularly unusual for cruelty charges (Cap. 169) to be invoked in animal smuggling cases, despite the inhumane methods of restraint used during the transportation of live exotic animals. An example of this was in a 2018 case involving six highly endangered Carolina box turtles. The suspect was detained on suspicion of cruelty, however, when prosecution was initiated, the defendant faced charges relating to the illegal export of endangered species but no cruelty charges. From 2018 to 2020, it is believed that cruelty charges were only invoked in two cases linked to wildlife trafficking.

7.2 Cap. 139

7.2.1 Inspections

The Secretary for Food and Health stated in June 2020 that all animal traders licensed under Cap. 139B are inspected by AFCD (AMD) at least once per month through “routine inspections” to ensure animal health, welfare and compliance with license conditions. Additional “surprise inspections” are conducted in response to complaints. According to AMD, both types of inspection “are conducted without prior notice being issued to the animal trader”.

From 2017 to 2019, the AFCD reported conducting nearly 13,740 inspections of animal trading and dog breeding activities (including routine and surprise checks), ranging from 4,120 to 4,995 per year. Government statistics and correspondence confirm there were no convictions for breaches of licensing conditions for exotic animals from March 2017 to 2019.

Over the same period, there were no convictions for trading animals other than cats and dogs without a valid ATL (i.e., exotics), in contrast to the approximately 75 cases brought against those trading dogs and cats without a licence.

Over the last six years (2015-2020), the AFCD has indicated that no warning was issued to any animal traders (except dog and cat traders), nor any animal seized from licensed traders. It is possible that there have been no contraventions of the law over this time period. However, numerous observations by local researchers of exotics have routinely identified trader practices (e.g., selling of unweaned animals, poor sanitation) that potentially breach ATL conditions. To address such potential issues, further safeguards may be beneficial.

In addition, no dead birds have been reported to AFCD, despite the requirement to report such under the ATL. Additional Conditions (para.7) and observations by local researchers indicating that bird deaths are common and expected. If deaths are occurring, as they must be, they should also be recorded when ATL holders account for the balance of animals under the PLs for CITES-listed species, though these are not available for public reference.

Cap. 139 does not provide any powers of arrest and search, such as those variously available through Cap. 169, Cap. 170, Cap. 586 and Cap. 167.

7.2.2 Persistent Breaches

_UNSANITARY CONDITIONS IN MARKET AND SHOPS_

Local observations have noted unsanitary and overcrowded conditions in shops and wildlife markets (see Part I: Photo Series B). Veterinary surgeons and veterinary support staff have made similar observations, with many expressing concern over the conditions in Hong Kong’s exotic pet shops and markets.

Examples of the breaches are included in Sections 7.2. Refer to Part I: Section 5.3 for more on low standards of care in Hong Kong’s Pet Trade.

_SALE OF UNWEANED ANIMALS_

In breach of Regulation 12 of Cap. 139B, following market observation and communication with veterinary staff, it is evident that unweaned and incompletely weaned birds are regularly sold in local markets, e.g., at Yuen Po Bird Market (see Images 1-5 below). Dogs and cats under 60 days old are not permitted to be imported or even transited/transhipped through the city but, in domestic sales, only dogs have a minimum age for sale.

Although the maximum fine has been increased to HK$100,000 for sales of unweaned animals (Regulation 13(1) of Cap. 139B), there appears to be a lack of enforcement.
Online sales
Aside from the concerns about the species and volumes in the online trade (Part I: Section 3.5), it would appear that a number of local regulations are being broken. Researchers from Lingnan University found numerous posts and transactions involving species that did not appear in CITES import records and/or could not be legally exported from their home range, raising concerns about the use of online markets for illegal trades. The species involved included Black pond turtles, Ryuku black-breasted leaf turtles, Palawan forest turtles (Siebenrockiella leytensis) and Ploughshare tortoises (Astrochelys yniphora). They concluded that as many as 36% of the CITES-listed species on sale were “likely illegally traded” as they had neither PLs under Hong Kong law nor CITES import records.

Meta Platforms, Inc. has explicit policies against the trade of animals on its platforms, including Facebook, Instagram and WhatsApp, and indicates that there are no conditions under which live animals should be marketed or sold. A review of its community guidelines and commerce policies reveals the following:

- Any PPO selling live animals (excluding livestock) online through these platforms is in breach of Community Standards, which indicate that any “attempts to buy, sell, or trade, donate, gift or solicit endangered species” are prohibited on the platform and that trades of “live non-endangered animals between private individuals” are also barred on the platform.

- Licensed animal traders using Facebook to market sales of animals are also in breach of the company’s business and commerce policies. These indicate that “Listings may not promote the buying or selling of animals and animal products”, specifying that “Live animals”, “Livestock” and “Pets” are Prohibited Content.

7.3 Cap. 586

7.3.1 Inspections
As with Cap. 139, AFCD’s system of inspections is an important means of detecting and deterring possible violations of Cap. 586, these include

a inspections of all import/export/re-export shipments of scheduled species; and
b local inspections of retail outlets, premises with PLs and of captive breeding operations.

From 2016 to 2019, the AFCD reported conducting 1,885 to 3,102 (2,592 on average) inspections in relation to PLs each year at premises including wet markets, aquariums, pet shops, flower shops, craft shops and Chinese medicine shops. According to a 2021 report by the Audit Commission, there has been a shift in the inspection focus from “routine shop inspections” to “inspection-cum-education visits”, as reflected by the decreasing percentage of routine shop inspections from 79% in 2016 to 28% in 2020 and the increasing percentage of inspection-cum-education visits from 21% to 75% in the same period. Both are forms of surprise inspection, taking place without providing prior notice to shops.

It is understood that the distinction between these two approaches is that both are aimed at detecting possible violations of Cap. 586, though “education visits” serve the additional purpose of informing shop owners about provisions of Cap. 586. Such visits are provided in response to patterns in trade, following complaints and “if there is any possible violation of the Ordinance”. Based on the high frequency of educational visits in recent years, this suggests that infractions are not uncommon, though prosecutions (as noted in Section 7.2) are limited.
African grey parrots (Psittacus erithacus) are often seized in poor condition, prosecutions rarely include cruelty offences invoked under Cap. 169. It remains unclear which species were seized and in what volumes. Despite the fact that the live animals seized were mostly reptiles (turtles, tortoises, lizards, and snakes), birds, fish, and stony corals.

From 2015 to 2019, the AFCD reported seizing a total of 18,123 live CITES-regulated animals, of which the majority were reptiles, birds, fish, and stony corals. It remains unclear which species were seized and in what volumes. Despite the fact that the live animals seized were often seized in poor condition, prosecutions rarely include cruelty offences invoked under Cap. 169.

Seizures have ranged in scale and significance, taken place all across Hong Kong and have been linked to criminal groups operating across multiple jurisdictions. Seizures have been sporadically assessed and repeatedly characterised as problematic due to parallel crimes, such as money laundering (Box 4).

Perhaps the most ecologically significant seizure in recent years comprised two Ploughshare tortoises and 55 Radiated tortoises – both Critically Endangered species from Madagascar – concealed inside an air passenger’s luggage in 2019. Ploughshires are in an especially precarious situation, with the pet trade wiping out more than half their population in a decade and their wild population comprising fewer than 200 adults.

The wildlife trade online has been sporadically assessed and repeatedly characterised as problematic by academics (Part I: Section 3.5). There have been few cases involving wildlife trade online in Hong Kong. AFCD officers conducted 49 operations specifically targeting illegal wildlife trade online between 2016 and 2019, seizing 97 live animals. However, it is evident that far greater oversight is required in the cyberspace locally.

Trafficers have attempted to smuggle animals through every major control point in the city, although the overwhelming majority were seized at the HKIA. Seizures and prosecutions in other jurisdictions also reveal the scale and nature of the illegal trade linked to Hong Kong. Authorities around the world have detected thousands of live animals both before and after they were smuggled through the city, as well as finding criminal networks engaging in other parallel crimes, such as money laundering (Box 4).

The largest known seizure of live animals in recent years comprised 11,687 yellow-spotted river turtles, 526 Pond turtles, 490 Red-bellied short-necked turtles, and 16 Snake-necked turtles, which were confiscated from a speedboat near Sha Tau Kok in 2015. The animals were concealed within layers of non-CITES species such as Three-striped mud turtles (Kinosternon baurii) that had also been illegally acquired. These were but a few of numerous shipments sent over at least an 18-month period. Cheung was sentenced in December 2019 to 6-months imprisonment, fined US$5,000 and subject to 3-years supervised release.

Chin Reptile Smuggling Ring - Australia & Hong Kong - December 2017-August 2018

In March 2021, Australian resident Chek Wei Javill Chin was sentenced to 3.5 years imprisonment in Australia, for his role as “ringleader” in a reptile smuggling ring, pleading guilty to a series of nine charges. Along with co-conspirators, he had been illegally exporting an array of Australian native species including Shingleback lizards, Blue-tongue lizards, geckos, Lace monitors, pythons and Water dragons to addresses in Hong Kong. At least 20 parcels were discovered by authorities in Australia, with the reptiles bound with duct tape or within socks and concealed inside potato chip tubes, toys, and other household items. Several of Chin’s co-conspirators had already been convicted for their roles in the operation. Such operations appear to be frequently conducted and attempted between Australia and Hong Kong.

Kang Reptile Smuggling Ring - USA, Malaysia & Hong Kong - June 2017-December 2018

In December 2020, Chinese citizen Kang Juntao was extradited from Malaysia to the USA for his role in facilitating the successful trafficking of at least 1,500 protected turtles out of the USA to Hong Kong and Mainland China, valued at around US$2.25 million, as well as laundering the proceeds of the crime. Kang was sentenced in October 2021 to 38 months in prison and one year of supervised release.

Chin Reptile Smuggling Ring - USA & Hong Kong - January 2019-July 2019

In 2019, Vincent Cheung Nai Chun, the owner of “Reptile Paradise” in Hong Kong, was charged in the USA for his involvement in arranging and paying for the smuggling of CITES Appendix I Rhinoceros iguana (Cyclura cornuta) as well as Appendix II Florida box turtles (Terrapene baurii). Spotted turtles (Clemmys guttata) and Diamond back terrapins (Malaclemys terrapin) to Hong Kong. They were sent by Cheung’s co-conspirator Michael Allen Pata, who ran a Florida business also called “Reptile Paradise.”

The animals were concealed within layers of non-CITES species such as Three-striped mud turtles (Kinosternon baurii) that had also been illegally acquired. These were but a few of numerous shipments sent over at least an 18-month period. Cheung was sentenced in December 2019 to 6-months imprisonment, fined US$5,000 and subject to 3-years supervised release.

Chin Reptile Smuggling Ring - Australia & Hong Kong - December 2017-August 2018

In August 2017, Michael Allen Pata, a resident of the USA and co-conspirator to Cheung, was convicted in the USA for his role in facilitating the trafficking of at least 5,000 protected turtles out of the USA to Hong Kong and Mainland China, valued at around US$2.25 million, as well as laundering the proceeds of the crime. The offences were committed across at least five states in coordination with mostly Chinese nationals in the USA on student visas. The smuggling ring trafficked at least five CITES-regulated species including Eastern box turtles (Terrapene carolina), Florida box turtles (Terrapene carolina), Gulf Coast box turtles (Terrapene carolina major), Spotted turtles and Wood turtles (Glyptemys insculpta). The turtles were “inhumanely bound” with duct tape and hidden in socks when they were shipped. Kang was sentenced in October 2021 to 38 months in prison and one year of supervised release.
7.4 Easing CITES Regulations

As noted in Section 4, in 2006, the government replaced the Animals and Plants (Protection of Endangered Species) Ordinance (Cap. 187). The result was the introduction of PESAPo (Cap. 586). The intention was to streamline the licensing system, ultimately making it easier to trade scheduled species. The government rationale at the time and main amendments were as follows:

"...to remove inconsistent treatments which are not justified on operational grounds. In addition, with the enhanced publicity and communication with the trade and the substantial increase in penalties in 1996, illegal trade in endangered species is in general under control. It is therefore possible to remove certain local controls that are over and above CITES requirements to minimize inconvenience and cost of compliance to the trade/users without compromising our obligations under CITES":230

"With the streamlined licensing system under which each import/introduction from the sea/export/re-export/possession license would be issued on the basis of individual shipment or keeping premises rather than individual species, the fee structure also needs to be revised. We propose to simplify the fee structure by replacing the 14 existing fee items with nine new fee items":231

"The trade in general will benefit from the proposals but it is not expected the trade volume of endangered species will increase noticeably":232

The intent was to significantly reduce the number of licenses required. At the time the following was forecast233:

- About 40% of the applicants would be exempted from the import license requirement;
- About 40% would still be required to apply for import licenses but they would benefit from the legislative amendments, since the number of licenses they need to apply for will decrease because of the multiple-species provision; and
- About 80% of the applicants would be exempted from the Possession License requirement. About 10% would still be required to apply for Possession Licenses but they will benefit from the legislative amendments since the number of licenses they need to apply for will decrease because of the multiple-species provision.

Those amending the law did not foresee the potential for a massive increase in the trade of CITES-listed animals (Figure 1) although the trade was on an upward trend at the time, nor the increase in wildlife crime that accompanied it.234 As a result, minimising inconvenience and the cost of compliance to the trade/users has undermined Hong Kong’s ability to meet its global biodiversity commitments.

7.4.1 Illegal in Country of Origin

Regardless of whether or not an animal has been illegally harvested and/or exported from its country of origin, provided it is not CITES-regulated, it can be legally traded in Hong Kong. This is in contrast with the like of the United States’ Lacey Act, which has a “long-arm” provision catering for illegality. The Act in other jurisdictions prohibits any fish or wildlife “taken, possessed, transported, or sold in violation of a state, federal, tribal or foreign law or regulation” from being “imported, exported, transported, [sold], received[d], acquire[d], or purchase[d]” in interstate or foreign commerce.235

It is noteworthy that in Hong Kong in the late seventies, there were provisions addressing the contravention of laws in other jurisdictions, as highlighted by the Hong Kong Bird Watching Society (HKBWS) in its 1982 report. The terms of the Special Permit as of November 1979 included the following clause:

"that the export of these animals/birds from the country of origin does not contravene any laws of that country”236

It is unclear when and why such a positive precautionary measure was removed from the permit, however, the deletion of this clause rolled back protections.237

Within Hong Kong’s live exotic pet trade, species such as the Tanzanian Turquoise dwarf gecko (Part I: Box 10) highlight the issues that arise from ignoring the legislation and trade bans in other jurisdictions. As recently as 2017, Hong Kong traders imported 300 Turquoise dwarf geckos. However, Tanzania has never officially permitted the collection and export of this species,238 indicating that these individuals were most likely acquired and exported illegally.

7.4.2 Lack of Public Disclosures

From the 659 seizures involving CITES-regulated species in 2019,239 AFCD prosecuted 226 cases, yet only seven press releases were issued.240 Lack of transparency presents a barrier to research and public understanding of the scale of illegal wildlife trade in the city.

7.4.3 Easing CITES Regulations

As noted in Section 4, in 2006, the government replaced the Animals and Plants (Protection of Endangered Species) Ordinance (Cap. 187). The result was the introduction of PESAPo (Cap. 586). The intention was to streamline the licensing system, ultimately making it easier to trade scheduled species. The government rationale at the time and main amendments were as follows:

Figure 1
Number of Annual Transactions Under CITES
Source: CITES (2019)
According to recent research\(^{19}\), Hong Kong has wild populations of ecologically significant and protected animals. These include the Golden con turtle (CITES Appendix I), Big-headed turtle (CITES Appendix I), and Beale's turtle (CITES Appendix I) which are targeted for poaching. For some species, Hong Kong is one of the last remaining habitats where breeding continues in the wild (e.g., CITES Appendix I Yellow-crested cockatoos\(^{19}\) - Image 6). Lack of ability to verify an animal’s source/origin and determine whether it has been legally imported assists criminals seeking to poach, sell and smuggle local wildlife (Section 4.4).

Some traders have openly admitted that they are selling native wild birds\(^{19}\), in contravention of Cap. 170, under which all local wild birds are classed as protected wild animals. Similarly, even for species not protected under Cap. 170, although the hunting of wild animals from country parks is prohibited, it is difficult to identify whether a native species in trade has been legally obtained due to the lack of traceability. Further, because of loopholes in Cap. 208 and Cap. 208A (Section 6 above), it appears that poachers may technically be allowed to remove wild animals from Country Parks, so long as they do not do so by using traps, snares, etc. Although the practicality of doing so would be challenging.

**Image 6**

Yellow-crested cockatoo (Cacatua sulphurea) being sold at the Yuen Po Street Bird Market (Observed in July 2018)

Photo Credit: Dr. Alexandra Astrid Andersson (HKU)

To address this problem, the government has largely relied on campaigns that advise the public to “think carefully before participating in animal release activities”. It has acknowledged that releasing animals into the wild may do more harm than good, but stated that some stakeholders caution against excessive regulations of animal release activity to avoid infringement of religious freedom.\(^{195}\)

The government reiterated as recently as 2017 that there was “no plan to regulate the operation of animal release activities or the related trades by legislative means”\(^{196}\). However, following public consultations on the amendment of Cap. 169, stipulations against the “release of an animal into an unsuitable environment” have been proposed. There are concerns by experts in the field\(^{197}\) that such a prohibition would have a limited effect, as what is termed as “unsuitable” would be difficult to legally define. Indeed, such a term would appear insufficient to curb all but the most egregious releases (e.g., freshwater species into marine environments). For example, releasing a freshwater turtle species such as Red-eared sliders into freshwater may not contravene the proposed stipulation, despite the invasion risk and fact that the animal has, in practice, been abandoned.

The abandonment of the most commonly “released” animals (i.e., birds, turtles and tortoises) should be criminalised. Under Cap. 170, these animals, if local, are protected and are prohibited from being caught locally (Section 6 above). Any such animals available for release would therefore need to be imported, illegally captured or captive-bred (locally or in other jurisdictions) increasing the risk of invasive species and pathogens being introduced into Hong Kong via these mass abandonments (Part I: Section 4.4.3).

In addressing these loopholes, any legislative or policy remedy should not impede or interfere with existing practices of releases for conservation purposes. Such practices include translocating or returning injured or poached endemic wild animals to appropriate habitats under the supervision of authorised ecologists, veterinary surgeons and other conservation professionals.\(^{199}\) Further, requirements could be imposed that any release into the wild environment is regulated by law and only done strictly with permits.
8 Animal-related Legislation in Overseas Jurisdictions

Due to the growing developments in animal welfare science and global awareness of animals as sentient beings, many countries have begun to review, amend, and improve legislation for the benefit of animal and public health as well as the environment, including the protection of exotic species in the pet trade. Hong Kong is lagging behind in this trend. Whiffitt and Woodhouse's (2010) review of animal trade legislation highlighted other countries' efforts to improve regulation and controls on the trade, some of which could be considered for Hong Kong.

In contrast to Hong Kong, animal traders' codes of practice in the United Kingdom, Australia (e.g., New South Wales, Victoria, Queensland), New Zealand, and Switzerland have extensive conditions and guidance notes for the selling and keeping of animals, where many species-specific conditions (including for small exotic mammals, birds, reptiles, and amphibians) are detailed. These include stipulations about minimum enclosure sizes and stocking densities, monitoring of health, welfare, and behaviour, provision of species-specific husbandry and enrichment, thermogradient and humidity levels, UVB lighting for birds and reptiles, bedding and substrates, important diet information, water quality checks, and minimum water quality standards for aquatic animals, among others.

It should be noted that although not all items listed in these codes of practice are compulsory to follow or legally binding, they can have a positive impact on trade practices and assist the pet shop industry in meeting community and international expectations for pet welfare. The extensive guidance provided helps traders in raising their animal husbandry standards, and likewise supports officers in their inspection and prosecution of traders that fail to provide for the animals.

By comparison, Hong Kong Codes of Standards (COS) for exotic pet ATL holders and their additional conditions lack detail, with often-only vague references to requirements (Section 3A). The licensing system as it stands is thus considered insufficient to ensure animal welfare and protect the health of animals, the public, and the environment. Specific country examples are provided below, with additional details in Appendix H. For reptile pets, insufficiencies in the trading conditions will be mostly addressed by the 2023 animal welfare and protect the health of animals, the public and the environment. Specific country examples are provided below, and are to be interviewed to determine the suitability for their care in animals. In the UK, animal breeders and traders are required to attend training courses at levels 2 and 3 of the National Vocational Qualifications.

Evidence-based husbandry information for purchasers

In Victoria, Australia, literature about animal health and husbandry, responsible pet ownership, and current legislation covering the registration of pet animals must be provided by the pet shop to the pet buyer. Such information is to be prepared in consultation with relevant professionals. Information prepared by herpetologists relating to specific species being sold is also required to be provided to the purchasers of reptiles.

Considerations for reducing stress

In Australia, the UK, and Switzerland, it is recognised that reducing potential stress is important for the psychological health of animals in trade. Measures include the provision of darkened hiding places away from disturbance, provision of environmental enrichments, removal of excessive noise and vibration, minimising olfactory and visual contacts with sources of stress, and requiring that social animals need companionship and require suitable conspecifics.

Incentives for higher standards of care

The UK provides incentives for traders to achieve higher standards of care for the animals by having a rating system. To receive a trading license, minimum standards must be met, but businesses that apply higher standards will be able to gain a 4- or 5-star rating in the “Animals Activity Star Rating System”, and qualify for a longer license (e.g., 2 or 3 years as opposed to a one-year license) and pay a lowered license fee. Similarly in Singapore, the Agri-Food and Veterinary Authority has graded pet shops according to their compliance with the licensing conditions and extent of adopting the recommended “Pet Shop Best Practices”. The pet shops’ grades are posted on the internet. The shops are also required to display their grades inside the shop premises.

Traceability

For the control and traceability of certain exotic species, the UK and individual EU countries require Annex A animals (a predetermined list of species which includes, inter alia, all CITES Appendix I species) in commercial use to be permanently marked with a standardised microchip. Where microchipping is not physically possible for the animal, another form of permanent identification must be used.

Biosecurity

Multiple jurisdictions consider biosecurity important for the protection of the public health, native wildlife, livestock and domestic animals, especially in Australia, New Zealand, and the UK. Consequently, many species are not allowed to be imported, and where allowed, mandatory post-import quarantining rules are strict. Commercially traded animals are checked on entry into the UK to ensure that they meet veterinary import conditions, which includes identity checks, inspecting general welfare conditions of the consignment, and in most cases, a physical examination. Australia imposes a 90-day post-arrival quarantine for reptiles, where necessary, further examinations and tests and/or treatments are performed, at the importer’s expense. Animals that die are subject to post-mortem examination.

In terms of disease management of animals in the trade, NSW and Victoria pet shops are required to have quarantine facilities, treatment, and veterinary care for all sick animals. In contrast, Hong Kong only requires separation of animals or birds under treatment for a communicable disease.
Summary of Key Issues

The prevailing system regulating Hong Kong’s exotic pet trade comprises several hundred personnel tasked with overseeing imports, exports, quarantine, health checks, inspections, permit applications, premises inspections, prosecutions, seizures, and more, concerning millions of animals drawn from hundreds of species arriving from dozens of countries every year. The task of regulating this trade is highly challenging and falls to relatively few staff given the scope of work and is distributed across multiple departments and divisions, each of which is charged with enforcing a patchwork of parallel regulations with potentially tens of thousands of animals arriving and exiting the city every day.

The local regulatory landscape provides protections and controls in many aspects of the local exotic trade. However, there remain many outstanding challenges, including obstacles to enforcement; outdated, unclear or inconsistent language across ordinances and in policy documents; as well as significant gaps in both requirements and information. Fundamentally, there is little known about the composition of the local market. The fates of thousands (if not millions) of animals are unclear. It is unknown whether they died, were eaten, sold as pets, or were trafficked out of the city. Extranominal groups, such as anthropods, traded in vast quantities, are without basic safeguards. The reforms of PLS in the mid-2000s have contributed to the system with less accountability and fewer controls, which relies principally on honest paper work.

Common sense safeguards to ensure that non-CITES exotics arriving in the city have been legally and sustainably sourced have been legally imported in decades.

As the COVID-19 pandemic continues to rage, climate change affects every part of our planet and the biodiversity crisis deepens, the time is now to consider humanity’s relationship to nature and the steps that may be taken in Hong Kong to better safeguard humans, animals and the planet.

References (Part II)

9 i) Secretary for Justice v Fung Chi Hoi (2019) 4 HLRD 188.
12 l) Ibid.
15 o) Ibid.
16 p) 1935 (c) 1935 and (b) 1935. government of the Hong Kong SAR. Available at: https://www.spca.org.hk/images/PDF/hku_spca_review_hk_endangered_species_of_public_health_significance_eng.pdf [Accessed 22 June 2020].


Personal Communication


Audit Commission (2021) Chapter 3 - Control of trade in endangered species by the Agriculture, Fisheries and Conservation Department. 31 March 2021. Available at: https://www.aud.gov.hk/pdf/46/Audit03.pdf [Accessed 22 June 2021].


Webster reiterates the register in his 1977 paper: “Two systems of assessing quantities exist. One requires all animals to be li- censed, which obliges the dealer to keep a book of birds - animals, mammals, reptiles and amphibians - that pass through their hands, with details of the species, date of sale or other disposal; but there is no means of checking the accuracy of the logs, and most dealers are incapable of correctly identifying any but the commonest species. The second requires dealers to obtain import permits and submit import declarations. We system is wide open to abuse when no check can be made” (Source: Webster, M.A. (1977) China’s Back Gardens. Aquatic Conservation: 25(2).


This was notably illustrated in the context of Ball pythons, which had (on paper) been banned from the local trade since at least 2007. Within two months of queries regarding the legality of ongoing trade in Ball pythons, which were openly traded online, in pet shops and have been imported in their thousands, the AFCD had amended its Additional Conditions to note the exemption of Ball pythons from the ban, thereby providing clarification of the policy.
The Need for Policy Reform

The scale of Hong Kong’s exotic pet trade, as noted in Part II, has far surpassed what it was at the time of the initial drafting of both international and local regulations. As recently as 2006, when Hong Kong’s Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586) was enacted and its predecessor (Cap. 187) repealed, the exotic pet trade was a fraction of its current size. Lawmakers then explicitly called for deregulation to reduce the administrative burden on traders. The resulting rollback of requirements has more than likely been a significant factor in the proliferation of the trade since.

Current laws governing the trade are outdated, often vague, and in some cases unfit for purpose. The definitions of what constitutes an “animal” differ between related ordinances. Certain taxonomic groups (e.g., amphibians, arthropods) are largely unregulated. Burdens of proof are unclear and onerous to the point of regulations being challenging to enforce. Despite readily and frequently observed breaches in local animal markets, such as failures to comply with even the most rudimentary husbandry requirements, prosecutions under Cap. 139 and its subsidiary legislation remain limited. Without greater enforcement of these regulations and punitive penalties, deterrence is minimal. Local regulations are in considerable need of review and updating.

The suitability of exotics as companion pets has significant implications for animal welfare and public health and safety. There is little evidence, however, that pet suitability systems have been adequately developed and applied in Hong Kong.

Although Hong Kong’s animal trading and welfare laws have been reviewed by legal scholars and academics numerous times in recent decades, the same weaknesses and loopholes have been identified time and again, and persist today. The welcome amendment of the animal traders licensing regime (Cap. 139B) in 2017 addressed regulatory weaknesses and gaps in the dog trade, however, the same issues which motivated that policy change continue in the exotic pet trade. As a result of these and many other shortcomings, exotic animals in Hong Kong’s trade are vulnerable to unsustainable, harmful and cruel practices.

Traceability mechanisms, monitoring and surveillance of animal numbers and species imported and in trade as well as animal health and keeping conditions also need review and improvement, to minimise the risk of zoonotic and epizootic diseases. In response to historic outbreaks of Avian influenza, birds are the only taxonomic group of exotics which is monitored relatively strictly. Other taxa, such as amphibians, which can carry the devastating Chytrid fungus and ranaviruses, posing a risk to biodiversity and animal health, are subject to minimal oversight and no quarantine stipulations, despite such animals being traded in their millions.

The nature of any disease risk should be addressed via the likelihood of an outbreak and its consequences if it were to occur. A high likelihood, i.e., frequent exposure, may not result in infection and would likely be considered an acceptable risk. Conversely a low likelihood event with consequences that are serious would likely not be an acceptable risk. Such analyses are therefore important in informing animal trading policy.

The Hong Kong Government has indicated that it will continue to follow international practices on trading of animals. However, its regulations are in many instances less stringent than other jurisdictions. Broadly, Hong Kong could benefit from adopting elements of laws from other jurisdictions and trade partners, such as the codes of practice in effect across Australia, standards of care in the UK, chain of custody requirements in the EU, the USA’s longstanding Lacey Act’s mechanisms on traceability, and mechanisms for determining suitability of prospective animal traders as well as the grading of pet shops in Singapore.

Principles such as ensuring public and ecological safety, confirming the legitimacy of the sources, confirming that trades comply with regulations in both exporting and importing jurisdictions, among others, would markedly improve the sustainability, safety and suitability of the exotics trade in Hong Kong.

Halting the Global Biodiversity Crisis

The World Economic Forum’s annual ‘Global Risks Report’ in 2021 forecast that biodiversity loss over the next decade will, alongside climate change, pose a critical threat to the world. Such loss is driven by multiple factors including the demand for exotic animals sourced from all corners of the world across a multitude of often remote habitats. The trade is contributing to both the demand for and consequent demise in species that have provided invaluable insights into humanity’s own biology and play a key role in balancing important marine and terrestrial ecosystems. Without coordinated, informed and sustained efforts to manage entire ecosystems and supply chains, the trade is increasing the risk of ecologically vital and biologically unique species becoming extinct.
The COVID-19 pandemic has shone a spotlight on the exotic animal trade, presenting an opportune time to review, reorient and consolidate fragmented and outdated legislation by adopting a strong One Health approach to overseeing the trade. Such an approach aims to minimise risks to public and animal health, ensure animal welfare and, importantly, protect local and global biodiversity.

At a time when nations are committing to infectious disease prevention and preparedness, as well as improving animal welfare standards in general, Hong Kong should similarly show a genuine commitment to the ‘One Health, One Welfare’ approaches in safeguarding public, animal, and environmental health. The recently formed operational definition of One Health (as noted in Part I of this report), put forward by the One Health High Level Expert Panel indicates that such a holistic approach “mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.”

Adopting and building upon such an approach thus requires inter-professional and multi-sectoral communication, working at local, regional, national and global levels. It recognises that collaboration is key to maintaining wellbeing, reducing suffering, and in disease prevention, surveillance, control and mitigation. Moreover, a shift from reactive to preventative and proactive efforts to combating disease is urgently needed to address the complex health risks and problems that exist.

As a thoroughfare, a destination market, and a highly developed city equipped with world-class facilities and expertise, there are no significant barriers to developing and implementing a ‘One Health, One Welfare’ within the city. Hong Kong should therefore seize the opportunity.

Overall, our recommendations for enhancing governance and regulatory enforcement of the exotic pet trade in Hong Kong are wide ranging in scope, including amendments to existing statutes, changing and implementing policies where the powers to do so are vested with the Director of AFCD, and introducing schemes to positively incentivise the trade to improve practices.

With recent global events and recognition of the need to better regulate live animal trades, it is hoped that today these recommendations will not fall on deaf ears.

Seizing the Opportunity: One Health is Key

The live exotic animal trade in Hong Kong is disproportionately vast, globally significant for some species, and fuelled by demand for pets and food. It is fast-moving and high-volume, comprising a diverse array of animals, both captive-bred and wild-caught, originating from almost every biome. As such, it impacts hundreds, if not thousands, of species as well as ecosystems beyond Hong Kong’s borders.

Little is being done to ensure the trade is not detrimentally impacting biodiversity elsewhere, despite Hong Kong being a signatory to the Convention of Biological Diversity (CBD). Article 3 of CBD lays out the expectation that signatories should take “the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”

Hong Kong’s Biodiversity Strategy Action Plan (BSAP), introduced in 2016 to comply with its CBD commitments, is city-focused and does little to address the biodiversity impacts of its trade felt in other jurisdictions. Without enhanced efforts to regulate the exotics trade in and through the city, Hong Kong does not only impact the ecosystems from which animals are extracted, it also has the potential facilitate the introduction of pathogens and alien species into the ecosystems of adjacent and distant trade partners alike.

China’s 14th Five-Year Plan (FYP) emphasises the importance of conserving the natural environment and developing sustainably. It stresses the imperative to strengthen animal epidemic prevention, build the nation’s biodiversity protection network, modernise animal husbandry, strengthen controls on invasive species and reduce consumption of wild animals. As a Special Administrative Region and a leading trade hub and gateway to China, Hong Kong has the impetus to adopt similar goals.

The recommendations are broken down by statute and prioritised as follows:

- **Priority A**: high priority recommendations to be considered at the earliest opportunity;
- **Priority B**: high priority recommendations, but where it is understood some aspects are under consideration;
- **Priority C**: medium priority recommendations.

**Rebecca N. Donnelly**

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## Nature of Insufficiency

**Establish clear standards defining when**

- Amend the ATLs to include advertising
- Require a one-off permit for the sale of exotic pets
- Ensure the up-to-date list of nADs is
  - Stipulate the Health Certificate
  - Update the interpretation of ‘animals’
- Increase penalties to be more

### Priority A Recommendations

<table>
<thead>
<tr>
<th>Legislation Reference</th>
<th>Nature of Insufficiency</th>
<th>Report Section Reference</th>
<th>Priority A Recommendations</th>
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<td>Cap. 139A: Public Health (Animal and Bird) Regulations</td>
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<td>Cap. 139 §2 Interpretation</td>
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<tr>
<td>Cap. 139A §4 (T) Special Permits, Removal of animal and birds</td>
<td>The definition of ‘animals’ for the purposes of the ordinance excludes some vertebrates, notably amphibians and fish, as well as invertebrates (e.g., insects, arachnids, cephalopods, corals). As such, these animals are not afforded animal health and welfare considerations, potentially leaving gaps in efforts to safeguard public health.</td>
<td>Gap in requirement(s)</td>
<td>Update the interpretation of ‘animals’ and ensure it is present and consistent (as appropriate) across all related ordinances and subsidiary legislation (e.g., Cap. 109 Cap. 170 Cap. 208, Cap. 586), with a clear rationale for requisite exclusions.</td>
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### Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance

**The Ordinance aims to:**
- Give effect in Hong Kong to the Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Regulate the import, introduction from the sea, export, re-export, and possession or control of certain endangered species of animals and plants
- Provide for incidental and connected matters.

<table>
<thead>
<tr>
<th>Legislation Reference</th>
<th>Nature of Insufficiency</th>
<th>Report Section Reference</th>
<th>Priority A Recommendations</th>
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</thead>
<tbody>
<tr>
<td>Cap. 586 §10, 11, 23</td>
<td>Possession or control of specimens of Appendix I and II species</td>
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The current PL quota system allows for the trade of unlimited numbers of animals under a single license over a 5-year period. The PLs are issued for a specified number of animals, rather than individuals, and a single PL may cover multiple CITES-regulated species. There are no mechanisms in place for identifying or verifying that the animals present at a premises are in fact the licensed animals. In combination, this system makes tracing legally imported species and enforcement problematic and can lead to laundering.

**Challenge to enforcement**

- **Gap in requirement(s):** Amend the PL system
  - Replace the quota system with a single PL per consignment, with a tamper-proof mechanism for identifying individual animals, in effect specifying animals to specific PLs.
  - Copies of the consignment PL provided to PPOs upon purchase and other ATL-holders on transfer.
  - Return the validity period for PLs to two-years.
  - Return to issuing a separate PL for each individual species listed in the schedules of the Ordinance.

The PL system relies on the accuracy of the trader reporting (births and deaths) and transaction records, with a paper record of the document held and maintained solely by the trader.

**Challenge to enforcement**

- **Gap in requirement(s):** Implement robust methods and protocols for verifying the identities of animals (i.e., permanent identification, microchipping) to allow cross-checking of animals in premises with PL documentation (see also Recommendation [A] 1a).
- To ensure data on the trade is up-to-date and simplify oversight and record-keeping, consider digitising the system.

Captive-bred species are currently subject to less stringent trading requirements than species of wild origin and PLs are not required for captive-bred Appendix II species. However, it is challenging to differentiate wild from captive-bred animals.

**Gap in requirement(s):** Return captive-bred CITES Appendix II animals to the PL system, so that all CITES animals (except Appendix III) require a PL. This would include ranched animals.

Ranched animals are currently excluded from the PL requirements. However, ranching is predicated on harvesting animals from the wild and returning a portion to their natural habitat, to sustain endemic populations. Fundamentally, all ranched animals are of wild origin.

### General (applies to multiple ordinances)

- **Gap in requirement(s):** Implement robust methods and protocols for verifying the identities of animals (i.e., permanent identification, microchipping) to allow cross-checking of animals in premises with PL documentation (see also Recommendation [A] 1a).

### Relevant Ordinances

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<tr>
<th>Nature of Insufficiency</th>
<th>Report Section Reference</th>
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| Animal health, public health and environmental health (biodiversity) are not well reconciled throughout the legislation. | Part II Sections 4 & 5 & 6 | [A] 6 Enhance the One Health approach at a high policy level and review regulations with a view to understand and manage global and local health risks and ensure a more environmentally sustainable balance. Ensure incorporation into the regulatory framework, as part of the decision-making process as to what can be traded and how to minimise/manage related risks.
| Lack of holistic approach to One Health across the animal trading legislation. | Part II Sections 5 & 6 | [A] 7a Undertake studies including continuous risk assessments of zoonotic and epizootic diseases (including antimicrobial resistance) based on up-to-date scientific information and communication with local veterinary surgeons and pathologists.
| | Part II Section 3 | [A] 7b Conduct regular disease surveillance for imported exotic pets and wild animals in Hong Kong.
| | Part II Sections 4 & 7 | [A] 7c Establish baseline health profiles for native wildlife, especially threatened species.
| The criteria for approval of Special Permits are not clear and decisions appear to be discretionary and based on a number of ‘major factors’. These include level of domestication of the species, risk of disease introduction, animal welfare, public safety and ecological impact. However, clear guidance is not provided for the public/traders to understand the approval mechanism of the Special Permit, e.g., the specific criteria determining level of domestication of a species. | Part II Sections 4 | [A] 8a Develop the existing work that AFCID conducts to assess the sustainability, disease risk, suitability, potential invasion threat, etc. of species prior to allowing importation, and incorporate into a list of pre-screened and approved species that are permitted to be traded – a so-called ‘positive list.’
| Despite the government indicating that ATL pet trade holders must not have ‘large’, ‘dangerous’ or ‘venomous’ animals in trade, such animals are allowed to be imported via the Special Permit system. At present, conservation status does not appear to be factored into decisions to authorise non-CITES imports, with tens of thousands of threatened exotic animals being permitted to enter the city. Native species have been found illegally within domestic markets, having been captured locally. The general lack of transparency and traceability impedes effective monitoring to ensure public safety, animal welfare and protection native species. | Part II Sections 4 & 7 | [A] 8b Develop the existing work that AFCID conducts to assess the sustainability, disease risk, suitability, potential invasion threat, etc. of species prior to allowing importation, and incorporate into a list of pre-screened and approved species that are permitted to be traded – a so-called ‘positive list.’

Pre-screening criteria/rationale for including an animal on said positive list should be both science and policy based as appropriate. This may need to be country-specific. These lists and the accompanying assessments should be made readily available on the government’s website. Assess new species that have not been previously imported and make the results available for public reference. Prohibit the trade in species that are native to or have established populations in Hong Kong.

Introduce provisions so that possessing an animal that is not on the positive list is an offence.

| Introduction provisions that prohibit PPOs from importing exotic species. | Part II Section 3 | [A] 8b Develop the existing work that AFCID conducts to assess the sustainability, disease risk, suitability, potential invasion threat, etc. of species prior to allowing importation, and incorporate into a list of pre-screened and approved species that are permitted to be traded – a so-called ‘positive list.’

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Introduce provisions so that possessing an animal that is not on the positive list is an offence.
Priority B Recommendations

**Cap. 139B Public Health (Animal and Bird) (Trading and Breeding) Regulations**

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<th>Nature of Insufficiency</th>
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| ATL conditions are insufficient to ensure protection of animal welfare, animal health and public health | Cap. 139B §4 Prohibition of trading animals without licence, etc. | Undertake a review of the feasibility and applicability of microchipping and tagging all exotic pet species in trade. Protocols and methods are already implemented in the regulation of Appendix I species (see also Recommendation [A] 5).

Where concerns are raised about the provenance of animals in trade, testing measures such as stable isotope analysis could be more widely adopted and the necessary local capacity bolstered. Measures to ensure chain of custody is traceable should be developed. This will facilitate traceability of scheduled and non-scheduled species and enhance enforcement of possession licenses, facilitate pursuit of cruelty cases and/or abandonment, assist in reuniting lost exotic pets with owners and promote responsible pet ownership.

Digitise microchip numbers and other registered details and integrate with electronic systems, such as the 1 AM SMART® profiles (modelled on the eHealth app, to include veterinary records, permits, owner registration, trader business registration, CITES records, etc.).

Cap. 139B §6 Standards of primary enclosures, etc.  
Cap. 139B §9 Husbandry and sanitation  
ATL husbandry conditions are too vague with no definition of terminology such as ‘adequate’, ‘sufficient’, ‘ample’ and ‘overcrowded’ in addition, some essential requirements are also omitted. Enforcement is a challenge due to the lack of specifics and subjectivity in interpreting the ATL conditions.  
Gap in requirement(s) needs clarification  
Challenge to enforcement  
Regularly review conditions to ensure that good animal welfare standards are consistent with advances in best practice/animal welfare science.
### Gap(s) in Requirement(s) or Section(s)

<table>
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<th>Legislation Reference</th>
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<tbody>
<tr>
<td>Cap. 139A §4 (1)</td>
<td>Restrictions on import of animals and birds</td>
<td>Part II, Section 34</td>
<td>Gap in requirement(s)</td>
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<tr>
<td>Cap. 139A §4 (1)</td>
<td>Special Permits, Removal of Animal and Birds</td>
<td>Part II, Section 34</td>
<td>Gap in requirement(s)</td>
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### General (applies to multiple ordinances)

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<tr>
<td>Cap. 139B</td>
<td>Public Health (Animal and Bird) (Trading and Breeding) Regulations (cont’d)</td>
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<td>Gap(s) in knowledge</td>
<td>Part I, Section 15</td>
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<td>Conduct regular thematic surveys on private ownership of pets including exotic species.</td>
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<td>Exotic Pet Ownership review</td>
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<td>The last review of private pet ownership involving exotic species in Hong Kong was conducted by the C&amp;SDD in 2009.</td>
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Nature of Insufficiency
Review methodologies to assess the
Introduce additional licensing conditions
Prohibit the trade in live snakes for food

Exotic pet testing prior to import is limited to Avian influenza (AI) for all pet bird species, avian Chlamydioidosis for Psittaciformes bird species, and Salmonella for pet turtles.

Quarantining of birds on arrival is typically limited to 24 hours (depending on the duration of AI testing procedure) which is insufficient for recognition of many diseases. Moreover, veterinary surgeons are not consistently present at the AAH to identify sickness in animals.

Testing on arrival is also limited, e.g., apart from AI, avian Chlamydioidosis (for birds) and Salmonella (for pet turtles) is only tested on certain consignments.

Health Certificates do not ensure animal or public health as currently administered, e.g., masking phenomena could conceal ailments at the time the certificate is issued.

As stipulated under the Permit Terms for Importation/Transhipment of Pet Birds, birds of the Psittaciformes order are to be tested negative for avian Chlamydioidosis or treated with transport, testing, quarantining, etc. Should it be deemed necessary for further testing to be conducted, the importer/owner/trader should be required to bear any costs associated with transport, testing, quarantining, etc.

• Remove the requirement to provide prophylactic antibiotics against avian Chlamydioidosis in Psittaciformes species, in favour of screening and treatment as noted above to reduce the risk of antibiotic resistance.

• Investigate the causes of sickness and death. This should include provision of medical workup and additional disease testing, treatment or necropsy of deceased animals. To ensure welfare of live animals, and nursing care or humane euthanasia should be provided.

The Code of Standards and the Additional ATL conditions indicate that traders should not trade in large, dangerous or (with some exceptions) venomous animals. However, the government allows the import of such animals via its Special Permit system.

According to the AFCD, no bird deaths in ATL premises have been reported in recent years, despite observations of dead birds in markets and requirements to report bird deaths within 3 days.

Breeding of exotic animals is not regulated resulting in a lack of traceability and animal health and welfare issues, as well as an increasing potential public health risk from zoonotic diseases.

By contrast, dog breeders are required to register and enrol breeding dogs under the Dog Breeding Programme. AFCD collects samples of DNA to establish parentage.

Cobras and other venomous snakes have been permitted to be traded as food under ATLs. Although according to import records none have been imported in the last decade, the species is available in markets and welfare is of concern due to the inhumaneness of their slaughter, the hygiene of their keeping & preparation and lack of strict oversight (including of breeding).

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### Nature of Insufficiency

- **Cap 139: Public Health (Animals and Birds) Ordinance - General**

  **Traders are not required to provide PPOs with information on public and animal health aspects, animal welfare and care, which would provide a degree of consumer protection.**

  Gap in requirement(s) | Part II Sections 33, 5 & 8
  | **C** 10a | Introduce mandatory pet shop labelling, indicating species (common and scientific name), origin/source, conservation status, care requirements, size when full grown, lifespan, and other challenges of keeping the exotic pet based on suitability schemes. (see Recommendations [A] 8a, [C] 6) (e.g., flagging hazards such as suitability with children or the immunocompromised).  
  | **C** 10b | Require traders to provide evidence-based husbandry hand-outs and contacts for veterinary surgeons/specialists capable of treating the species. This would also educate consumers on animal welfare and care.

- **Lack of prosecutions, seizures, warnings, etc. despite breaches of the ATL conditions, many of which are clearly and persistently visible at the front of house facilities in Hong Kong's exotic pet markets/shops, indicates that the government has taken an education and improvement approach to the trade, rather than enforcing regulations.**

  Challenge to enforcement | Part II Sections 7 & 8
  | **C** 11 | Provide incentives to animal traders (including breeders) where husbandry and other conditions provided to trade animals are higher than minimum standards. For example, introduce a pet shop and breeder rating/grading system based on compliance and exceedance with ATL COS and conditions. The pet shops' grades should be posted on the Internet and shops should be required to display their grades inside the shop premises. Good ratings could facilitate a lower license fee or extension of license period. As well as incentivising traders, this would increase consumer protection.

- **Cap 139 does not provide any powers of arrest, seizure and search, and limited seizure powers in contrast to those in Section 4 of Cap. 169 and Section 77, 11A and 17B of Cap. 170, Sections 32, 33, 37 of Cap. 586. Only senior veterinary officers or a person acting under their direction may seize an animal.**

  Gap in requirement(s) | Part II Section 12
  | **C** 12 | Provide powers to search and seize where a breach of Cap. 139 is suspected.

- **Data is not collated for the exports or re-exports of non-CITES species of exotic mammals, birds, reptiles, amphibians or other exotic taxa. A count of the numbers of Health Certificates issued for exports/imports is maintained, but there is no information on the species or quantities covered for which these certificates are issued.**

  Gap in knowledge | Part II Section 34
  | **C** 13 | Implement recordkeeping to track exports and re-exports of all taxa, to enhance understanding of trade dynamics.

- **Hong Kong currently lacks a Scientific Authority relying on its Management Authority (the Endangered Species Protection Division of AFCDF) for all aspects of CITES compliance. However, a dedicated Scientific Authority would provide additional capacity tasked with providing impartial guidance on appropriate disposal of wildlife (number of animals imported etc.) are frequently misaligned, meaning that cross-comparisons are inconsistent, with many codes lacking purpose and/or clear taxonomic information.**

  Gap in requirement(s) | Part I Sections 2.2 & 34
  | **C** 17 | Amend/add to HS Codes to include more specific codes, providing greater transparency on the taxa in trade and provide clearer designations for importers on use, e.g., “Snakes, live, for food”, “Passerines, live”, “Other amphibians, live,” “Yellow-spotted river turtle, live, not for food”.

### Legislation Reference

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<th>Nature of Insufficiency</th>
<th>Report Section Reference</th>
<th>Priority C Recommendations</th>
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</table>
| **Cap 586: Protection of Endangered Species of Animals and Plants Ordinance - General**

- **Hong Kong currently lacks a Scientific Authority relying on its Management Authority (the Endangered Species Protection Division of AFCDF) for all aspects of CITES compliance. However, a dedicated Scientific Authority would provide additional capacity tasked with providing impartial guidance on appropriate disposal of consigned live specimens, interpreting species listings, assisting with species identifications, confirming that imports are not detrimental in the exporting jurisdictions, assisting in ensuring exports of local species are non-detrimental and reviewing the suitability of recipients' housing and care (especially for live Appendix I animals).**

  Gap in requirement(s) | Part II Section 2.2
  | **C** 14 | Establish a CITES Scientific Authority for the Hong Kong SAR.

- **A loophole in Cap. 208 allows wildlife to be removed from a country park in the absence of hunting/trapping, etc. equipment specified in the ordinance – which is not prohibited.**

  Loophole | Part II Section 61
  | **C** 16 | Amend Cap. 208A prohibit the “removal, molesting or disturbance of any form of wild life within a country park or special area” except with a permit.

### General (applies to multiple ordinances)

- **Cap. 60 Import and Export Ordinance**
- **Cap. 139 Public Health (Animals and Birds) Ordinance**
- **Cap. 586 Protection of Endangered Species of Animals and Plants Ordinance**

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| **Cap. 60, Cap. 139, Cap. 586**

- The scale of the exotic animal trade and multiple entry points present enforcement challenges in terms of resources and manpower.

  Challenge to enforcement | Part II Sections 34, 42 & 74
  | **C** 19a | Permit imports of live exotic pets by air only.

- A designated port(s) of entry, facilitating improved enforcement and concentrating limited resources e.g., facilities and professional personnel required in the operations of Veterinary Border Control Consider whether consignments from Mainland China should be required to arrive by air, depending on distance from Hong Kong.

  | **C** 19b | Establish an electronic system so that AFCDF and C&SD data can be reconciled through to ensure the accuracy of both datasets.

- AFCDF record certain imports, e.g., food turtles, in kilograms, whereas C&SD measure by count of heads, preventing reliable cross-comparisons.

  Gap in requirement(s) | Part I Sections 22 & 24
  | **C** 19 | Establish an electronic system that AFCDF and C&SD data can be reconciled through to ensure the accuracy of both datasets.

- There is no regulatory measure to prevent the import of illegally sourced animals.

  Gap(s) in requirement(s) | Part II Section 74
  | **C** 20 | Undertake a comprehensive legislative review to determine the feasibility of restoring stipulations to Special Permits that trade cannot contravene laws in other jurisdictions and other regulations modelled on the USA’s Lacey Act which regulates the import of any species protected by international law or an exporting country’s domestic law and prevents the spread of invasive, or non-native, species (i.e., to ensure that exotic animals are not sourced or exported illegally.

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*continued next page*
Nature of insufficiency

Conduct a comprehensive review of the aquaria trade in Hong Kong, assessing the scale, potential impacts and regulatory oversight.

Data transparency: aquaria trade

Little information has been gathered in recent years on the scale, scope, diversity, regulatory environment, etc. of the aquaria trade in Hong Kong.

Gap(s) in knowledge

Part II: Section 2

Issue

Data transparency: wildlife crime

According to the Hospital Authority (HA) and HK Poisons Information Centre (HK-POIC), data is not regularly maintained on injuries relating to exotic pet animals, e.g., envenomation, bites. As a result, minimal data is available to assess and manage public health and safety risks in relation to exotic pets.

Gap(s) in knowledge

Part II: Section 7

Data transparency: issues and remuneration

Data available in relation to wildlife, injuries and conservation-focused NGOs. Represent the pet trade, travel sector, enquiries is resource intensive. Dealing with individual traffickers, as well as pet trader infractions directly approach the relevant government departments. Dealing with individual enquiries is resource intensive.

Gap(s) in knowledge

Part II: Section 1

ESAC composition

Members of the current Endangered Species Advisory Committee (ESAC) currently represent the pet trade, travel sector, antique industry, fur traders, traditional Chinese medicine practitioners, academia and conservation-focused NGOs. 19

Gap(s) in knowledge

Part II: Section 2

References (Part III)


4 The CBD is a multilateral treaty and the first global agreement to cover all aspects of biodiversity. The convention has three main goals: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources. (Source: CBD (2021) Convention — Introduction. Available at: https://www.cbd.int/entry/ (Accessed 14 December 2021)).


Appendices

Sources and Description of Data

Appendix A

Sources and Description of Data

1. Census & Statistics Department (CSD)
   Imports, exports and re-exports of live animals according to the Hong Kong ‘Harmonised System (HS)’ Commodity Codes (Part I: Table 1). These include identification of the use, taxa (species/genera in few instances), product type, volumes and values of import monthly and annually, exporting country.

2. ENB & FHB
   AFCD data requests (2015-2019)
   - All species imported, exported and re-exported for the pet trade including CITES (amphibians, reptiles, mammals, birds, fish, arthropods & marine invertebrates) and non-CITES (reptiles, mammals & birds) species. Additional information on volumes, country of origin, country of consignment, source, purpose, etc. were also provided where available.
   - All Possession Licenses issued for regulated species (i.e., Appendix II CITES-listed animal of wild origin or an Appendix I captive bred animal), the species and the numbers of heads covered by each (valid as of 1st January 2021).
   - No. of traders permitted to trade reptiles & venomous snakes.

   - No. of Animal Trading Licenses (ATLs) applied for, reviewed, rejected, as well as issued for reptiles, small mammals, birds and mixed trading premises (March 2017-19).
   - No. of Possession Licenses (PLs) issued for amphibians, reptiles, mammals, birds, fish, others & more than one type of animal.
   - No. of Special (Import) Permits issued.
   - No. of prosecutions relating to trades without valid ATL or in breach of ATL conditions and corresponding ranges of penalties.
   - No. of animals received and handled by AFCD, and the corresponding outcomes (reclaimed, rehomed, euthanized).
   - No. of live animals seized during inspections & enforcement actions.

   - No. of Inspections carried out by ESPD (Routine shops inspections & Inspection-cum-education visits), including no. revealing irregularities & shop closures.
   - No. of Licenses issued for import, export and re-export of CITES-regulated species.

4. CITES
   CITES Trade Database (2000-2018)
   Annual CITES imports, exports and re-exports of Appendix I, II and III species, including data on volumes, the country of origin, country of consignment, purpose, source.

Note: There are differences between data provided by AFCD, due in part to the CITES Secretariat’s aggregation of most trades between Hong Kong SAR, Macao SAR, Taiwan/Republic of China and People’s Republic of China. In an attempt to develop as comprehensive an overview as possible, AFCD data (2015-2019) has been prioritised over CITES database from the same period. This also suggests trade data for 2000-2014 are conservative.
### Alien & Invasive Exotic Species Identified in Hong Kong

<table>
<thead>
<tr>
<th>Taxonomic group</th>
<th>Count of species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphibians</td>
<td>4</td>
</tr>
<tr>
<td>Birds</td>
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</tr>
<tr>
<td>Marine invertebrates</td>
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</tr>
<tr>
<td>Fish</td>
<td>23</td>
</tr>
<tr>
<td>Mammals</td>
<td>8</td>
</tr>
<tr>
<td>Reptiles</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>181</strong></td>
</tr>
</tbody>
</table>

Data derived from 14 sources:

- Invasive Species Specialist Group (ISSG) Global Invasive Species Database
- Global Invasive Alien Species Information Partnership (GIASIP)
- Hong Kong Advisory Council on the Environment (ACE)
- Hong Kong Government Environmental Protection Department (EPD)
- Chan, W.H. et al. (2020)
- Carey, G.J. et al. (2001)
- Dalmer, T. et al. (2001)
- TRAFFIC (1993)
- Romer, J.D. (1977)

### The Challenge of Bird Nutrition

Traditionally, seed mixes are the main component of commercial bird diets and are still commonly sold as ‘complete diets’ for pet birds. However, a seed-based diet is one of the major causes of malnutrition as most of the dry seeds are deficient in many vitamins and essential nutrients.

Even though commercial food pellets for birds are available in the market, the quality and nutritional content of these products are highly variable or unknown, and only a small portion of these diets are actually recommended by avian veterinary surgeons.

Although it is true that for many bird species, seeds make up a large proportion of their dietary intake, the diets consumed by free-living wild birds cannot usually be duplicated for pet birds in captivity. In the wild, a large variety of food types are available, much more than those provided in seed mixes, e.g., wild parrots tend to consume semi-ripe seeds, which provide higher levels of nutrients in comparison with dried seeds in commercial mixes. The nutritional content of wild fruits and seeds are also higher than that of cultivated crops. Commercially available seeds are deficient in lysine and methionine, and contain excessive levels of omega-6 fatty acids compared to wild seeds.

Moreover, free-living wild birds consume a much higher quantity of food to satisfy the energy needs required to survive in the wild and to support flying, foraging, thermoregulation, reproduction etc., and seeds are a rich source of calories useful for satisfying this high energy expenditure. In contrast, a pet bird with a sedentary lifestyle, being restricted in small cages for most of the day, would have a lower energy requirements.

Unfortunately, even if a nutritionally complete diet could be assembled, it is often very challenging to prevent or stop a captive bird from the preferential selection of favoured but nutritionally unbalanced food from commercial food mixes.

This tendency to self-select food or refuse new diets also creates challenges to bird owners and veterinary surgeons, which requires patience during transitioning to a new, healthier diet (e.g., a completely nutritional pelleted diet recommended by avian veterinary surgeons), as some birds, particularly parrots may be fixated on certain number of preferred food types, and the new diet may not be perceived as food initially. Some seeds, particularly sunflower seeds are highly palatable; birds addicted to it are affectionately referred to as ‘sunflower-seed junkies’. However, this seed-based diet often comes with serious medical consequences such as profound calcium deficiency leading to seizures, bone deformities and pathological fractures.

Although ignorance of proper bird nutrition is no excuse, bird traders may allow economics to dictate the provision of or lack thereof essential food to their stock birds and only provide a small selection of food types (often a mono-seed diet), which restricts the birds to a limited range of food later on in life. When new or healthy foods are introduced they may not be perceived as food and are often ignored. Transferring a bird to a healthy diet is a long and arduous task and bird owners frequently give up in the process.
Husbandry-related Diseases Commonly seen in Hand-reared Baby Birds

Altricial birds are those that are underdeveloped when hatched; their eyes are not yet opened, and they have little to no down feathers. At the hatching and nestling phase, altricial birds are nest-bound and require considerable parental care, being dependent on parents for food, warmth, and protection etc. At the fledging stage, the young bird is ready to leave the nest but is often still looked after and fed intermittently by its parents outside of the nest. A bird is considered to be fully weaned when it can self-feed sufficiently without parental or human assistance, and is able to sustain its bodyweight for at least two weeks.

In circumstances where hand-rearing of young birds is required, proper nutrition and husbandry becomes critical to the survival and health of the bird. 

A range of medical conditions and emergencies in young birds result from inadequate or incorrect care. These include malnutrition from improper hand-feeding formula choice, incorrect preparation and feeding frequency, crop burns, crop stasis, oesophageal or crop trauma (bruising, abrasions, and punctures) from tube-feeding equipment, hypothermia, dehydration, aspiration pneumonia, ingestion of foreign bodies, as well as other bacterial, fungal, and viral infections. Malnutrition and inappropriate housing may also lead to musculoskeletal deformities in the growing bird. Young birds are often presented to the hospital as emergencies, as it is often challenging to notice illnesses, and young animals can decompensate and deteriorate quicker than adult animals.

The Association of Avian Veterinarians (AAV) and the Australian Veterinary Association (AVA) have position statements that oppose the sale or transfer of unweaned altricial birds to individuals without the necessary experience in accordance to accepted avicultural and veterinary practices, with AVA noting this as unethical. Dr. April Romagnano, an American Board of Veterinary Practitioners (ABVP) Board Certified Avian Specialist, expressed that sending owners home to wean baby birds on their own is ‘unsafe practice, at best’ as it often proves problematic to the wellbeing of the animal.

Some examples of commonly seen husbandry-related diseases in hand-reared birds are provided below. These are obtained from the paper on Pistacine Incubation and Pediatrics (Romagnano, 2012).

**Crop stasis**
The crop is an enlargement of the oesophagus and is situated in a bird’s neck above the chest/sternum. The crop is present in many species but not all, and serves as a food storage chamber, allowing a continuous flow of nutrition to the gastrointestinal tract.

Crop stasis is a frequently seen clinical sign where the food material fails to empty appropriately and food therefore persists in the crop, with some material often being regurgitated. Primary causes include infection (bacterial, fungal), dehydration of food in the crop, foreign bodies, burns, hypothermia etc. Secondary causes include gastrointestinal foreign bodies, gut stasis due to ileus, infection (bacterial or fungal), proventricular dilatation disease (PDD), polyomavirus, kidney or liver failure etc.

Depending on the underlying cause, crop stasis can be amenable, but it can prove to be a fatal condition if immediate intervention is not sought, as dehydration and sepsis can quickly occur.

**Crop burns**
Burns on the crop mucosa and skin occurs secondary to being fed excessively hot formula (food that is heated to around 42 °C or higher). Lack of awareness and re-heating of baby bird formula in the microwave is a common cause of crop burn, when “hot-spots” in the heated food are not mixed well but fed to the bird. This causes burning of the crop mucosa and overlying skin. Initially for a few days following the burn, clinical signs may be non-specific, and the animal may show signs such as poor appetite, weight loss, delayed crop emptying and crop stasis. As the condition progresses, the crop region may show signs of swelling and discoloration, then necrosis (death of bodily tissue) of the crop wall and skin may lead to a fistula formation (an abnormal opening between two bodily tissues, organs, or vessels), where a hole is created from the crop to the outside, allowing food to be poured out over the body from the opening.

This condition requires hospitalisation, supportive care and surgical treatment at an exotic veterinary hospital. If not treated promptly, the condition can be fatal. In some cases, crop burns may fistulate into the coelomic cavity and thoracic area, which often proves fatal.

**Foreign body ingestion or impaction**
Accidental feeding of foreign objects is common, e.g. when the rubber tips of hand-feeding devices fall off into the oral cavity of the bird and become ingested. Cage substrate and toys, or other human products lying around the house may be ingested by curious juveniles, sometimes leading to gastrointestinal impactions that require emergency surgical removal or poisonings that require hospitalisation for treatment and supportive care.

**Oesophageal or pharyngeal punctures**
A healthy baby bird’s feeding response is referred to as “pumping”, which is basically head and neck bobbing movements so that in a natural situation, the parent bird’s regurgitated food in the baby bird’s mouth is ‘pumped’ down the oesophagus into the crop. One of the methods used in hand-feeding is using gavage tubes and syringes into the bird’s oral cavity. Oesophageal or pharyngeal punctures occur secondary to tube or syringe feeding in vigorously pumping baby birds, which may cause bruising, tears and puncture wounds of the crop, warranting an emergency visit to the vet if the owner realises the damage done to the crop.

**Regurgitation**
Regurgitation can be caused by different disease conditions, such as blockage from foreign body ingestion, infection in the crop or gastrointestinal tract, proventricular dilatation disease, gout etc. However, many cases seen in Hong Kong are due to improper hand-feeding frequencies and feeding of large volumes of formula at each meal to the baby bird. In order to fit with a buyer’s busy schedule, owners are often taught by traders to feed larger but less frequent meals to un-weaned juveniles, which often leads to overfeeding and regurgitation at each meal. Regurgitation of liquid food can easily lead to aspiration (accidental inhaling of fluids or food into the lungs) which can cause aspiration pneumonia, a life-threatening condition particularly for a young, immunocompromised animal.

**Stunting**
Malnutrition, inadequate environmental warmth, improper formula choice and preparation, infrequent delivery of formula, and exposure to infection are possible causes of stunting. Stunted birds will usually become “poor-doers” (delayed growth or failure to thrive) and are at risk of suffering from chronic diseases.

**Musculoskeletal deformities**
Splay leg and other toe and leg deformities are common in hand-reared birds, and are thought to result from malnutrition, obesity, improper substrate and housing during the growth phase, or congenital defect.

**Beak malformations**
Some beak malformations may be congenital, but some are thought to be induced by poor or rough hand-feeding techniques. Malformations often require long-term corrections via frequent trimming, and provision of implants or extensions.

**Esophagitis or pharyngitis**
Infections of the oesophagus or pharynx are commonly caused by bacterial or yeast infections due to unclean formula or water.
Notifiable Animal Diseases (NADs) are listed in Cap. 139 in the interpretation of the word "disease". Additional diseases (i.e. Nipah virus and Hendra virus) have been included under Cap. 139M Public Health (Animals and Birds) (Disease) Declaration. Rabies is stipulated to be an NAD under the provisions of Cap. 421, the Rabies Ordinance. AFCD maintains a list including additional NADs, which is made available on request (denoted by *).

Collectively, the following are animal diseases currently considered to be notifiable in Hong Kong:

African horse sickness*
African swine fever*
Anaplasmosis
Anthrax
Bluetongue*
Buffalo disease
Canine distemper*
Canine parvovirus disease*
Cattle plague or rinderpest
Contagious bovine abortion
Contagious equine metritis*
Deerine
Epizootic lymphangitis
Equine babesiosis*
Equine encephalomyelitis (EEE, WEE, VEE, JE)*
Nipah virus infection
Equine infectious anaemia*
Feline panleucopaenia*
Feline respiratory disease complex*
Foot and mouth disease
Fowl cholera
Fowl pox
Glanders (including farcy)
Goat pox*
Hendra virus infection
Infectious canine hepatitis*
Influenza
Lumpy skin disease*
Newcastle disease of poultry
Parasitic mange
Peste des petits ruminants*
Pleuro-pneumonia contagious of cattle
Red water (Texas fever)
Ringworm
Rift valley fever*
Sarcotic mange
Septicaemia haemorrhagica
Sheep pox
Sheep scab
Strangles
Suria
Swine fever
Swine vesicular disease*
Tuberculosis
Ulcerative cellitis
Vesicular stomatitis*
Rabies*

These are the infectious diseases specified in the First Schedule to the Prevention and Control of Disease Ordinance (Cap. 599). Notification of suspected or confirmed cases of these diseases is required by law. Monthly notification figures are available on the CHP website.

Statutory Notifiable Disease List:

Acute poliomyelitis
Amoebic dysentery
Anthrax
Bacillary dysentery
Botulism
Chickenpox
Chikungunya fever
Cholera
Community-associated methicillin-resistant Staphylococcus aureus infection
Coronavirus disease 2019 (COVID-19)
Creutzfeldt-Jakob disease
Dengue fever
Diphtheria
Enterovirus 71 infection
Food poisoning
Haemophilus influenzae type b infection (invasive)
Haemophilus influenzae type b infection (invasive)
Hantavirus infection
Invasive pneumococcal disease
Japanese encephalitis
Legionnaires’ disease
Legrosy
Leptospirosis
Listeriosis
Malaria
Measles
Meningococcal infection (invasive)
Middle East Respiratory Syndrome
Mumps
Novel influenza A infection
Paratyphoid fever
Plague
Psittacosis
Q fever
Rabies
Relapsing fever
Rubella and congenital rubella syndrome
Scarlet fever
Severe Acute Respiratory Syndrome
Shiga toxin-producing Escherichia coli infection
Smallpox
Straptoctococcus suis infection
Tetanus
Tuberculosis
Typhoid fever
Typhus and other rickettsial diseases
Viral haemorrhagic fever
Viral hepatitis
West Nile Virus Infection
Whooping cough
Yellow fever
Zika Virus Infection
## Example Cases of Psittacosis (Chlamydia psittaci) Reported Overseas

### Dec 2020
- **Location attributed to disease acquisition**: Family outbreak of human psittacosis in China, contracted from two newly bought parrots.

### Dec 2008
- **Location attributed to disease acquisition**: Bird fair in Western France.

### Nov 2007
- **Location attributed to disease acquisition**: Bird show in village of Beuningen, Netherlands.

### Jan 2006
- **Location attributed to disease acquisition**: Pet shop worker in Slovakia.

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### Date | Location attributed to disease acquisition | Additional information
--- | --- | ---
Dec 2020 | Family outbreak of human psittacosis in China, contracted from two newly bought parrots. | • Three members of an extended family of 6 people were admitted to a hospital over the course of one week. They were diagnosed with psittacosis.
- The family had close contact with two newly bought parrots that were sick and died family members showing symptoms.
- This was the first reported family outbreak of human psittacosis in China, and illustrated that the disease is easily under diagnosed, misdiagnosed, or treated as atypical pneumonia.

Dec 2008 | Bird fair in Western France. | • Three hospitalised patients had attended a local bird fair organised by an association of amateur parrot breeders that lasted 1 day. Upon notification of the suspected psittacosis outbreak, environmental and veterinary investigations were implemented to trace the source of infection.
- A further 48 suspected cases were identified in participants, with 2 confirmed (laboratory confirmation was noted to be challenging; PCR testing was only performed for hospitalised cases). The overall infection rate was 38% (33/86), and did not differ by age or gender. The mean incubation period was 11 days (range from 6-22 days).
- Despite a veterinary examination at the commencement of the fair, no illness was reported in exposed birds.

Nov 2007 | Bird show in village of Beuningen, Netherlands. | • A general practitioner reported three patients with the same symptoms (high fever, vomiting, diarrhea, and headache) all of whom had visited a bird show.
- Upon active contact tracing by the local health service, 25 cases were found, 7 required hospital treatment and three had confirmed psittacosis infection identified by PCR testing. The infection rate was 33% (16/48), higher in members who had prolonged contact with the birds e.g. organizers or members of the bird society, than those who only visited the show (estimated infection rate 3% 6/198).
- A total of 74 pooled samples were taken from approximately 300 birds, and C. psittaci was detected in two birds.
- Birds were noted to have been inspected prior to the show, yet diseases were not identified, indicating the difficulty in detection.

Jan 2006 | Pet shop worker in Slovakia. | • A fatal case of psittacosis in a 42-year-old pet shop worker was attributed to close contact with exotic birds. The worker had no prior underlying disease.
- A colleague working in the same pet shop developed symptoms. Tests showed elevated titers of C. pneumoniae antibodies, but only low titers of C. psittaci. The colleague recovered after treatment with antibiotics.
- The paper recommended that clinicians must take great care in obtaining a solid medical history from patients when treating respiratory illness, as clinical signs of this disease can resemble those caused by other bacteria or viruses. In addition, it was recommended that health authorities should place greater emphasis on prevention and control of C. psittaci.

### August 1995
- **Location attributed to disease acquisition**: Shipment of pet birds in the United States.

### 2005
- **Location attributed to disease acquisition**: Family outbreak of human psittacosis in Japan, contracted from a newly bought parakeet.

### Additional Information
- A family of four (ages 34, 42, 66, and 72 years old) contracted psittacosis several weeks after having purchased a Cockatiel parakeet from a pet shop, which was identified as the source of infection. Only 2 of 4 members had close contact with the bird. The family required oral/ intravenous antibiotics, and one required hospitalisation.
- The parakeet died and its corpse was dispatched to the laboratory for investigation. The worker was confirmed in the bird via PCR testing.
- Occurrence of psittacosis in all members of a family is reported to be rare.

- A shipment of over 700 pet birds from a bird distributor in Florida was sold to nine pet stores in Atlanta.
- Three weeks later, the Georgia Department of Agriculture was notified that a bird purchased from the pet store chain had died shortly after purchase. Psittacosis was diagnosed at necropsy.
- It is required that bird dealers keep records of both the supplier and purchaser of birds, which assisted investigation to identify the disease origin.
- Investigation revealed that psittacosis was transmitted to 30.7% of households that had purchased these birds.
Examples of Conditions or Requirements in Overseas Jurisdictions

Key - NSW (New South Wales), VIC (Victoria), QLD (Queensland), UK (United Kingdom), SWISS (Switzerland), SG (Singapore)

Veterinary care and record keeping

NSW, Australia: requires that the contact details of a veterinary surgeon must be displayed in a prominent position at the pet shop. Where treatment to restore health of a trade animal is impractical or unsuccessful and the welfare of the animal is compromised, and where euthanasia is recommended by the vet or an Inspector, the animal must be humanely euthanised.

VIC, Australia: requires traders to have a written agreement with a sufficient numbers of vets to be on call for the first aid, treatment and humane euthanasia of animals.

QLD, Australia: pet shops are to keep records of trade animals for at least 2 years. These animal records include details of acquisition/ breeding, date of birth, name and address of supplier and breeder, date of sale, description and identification details, name and contact details of new owner, veterinary medical records, death/euthanasia date, and where known, the circumstances of the death.

Staff training

SWISS: Proficiency certificates and specialist training are required for animal keepers and attendants of pet businesses.

UK: No animal can be stocked or sold by a pet shop unless at least one member of staff on site is familiar with the care and welfare of the animals and has a recognised qualification and/ or can demonstrate suitable experience or training.

NZ: Training and competence in species-specific handling and care required for pet shop staff to ensure that the health and welfare needs of animals are provided.

NSW: Persons in charge of pet shop employees are required to ensure that staff are trained, experienced and competent in all aspects of species-specific animal care including husbandry, prevention of distress or injury, and cleaning. Staff training is to be provided on a biennial basis. Trainees must work under the direct supervision of experienced staff. Pet shops are encouraged to employ those with formal training and qualifications in animal care and management and first aid.

SG: Prior to applying for a pet shop license, a prospective licensee must attend and pass the mandatory training on pet welfare and animal management course, and be interviewed to assess the person’s suitability regarding working in a pet shop and care of animals.

Incentives for higher standards of care

UK: Provides incentives for traders to provide higher standards of care of animals by having a rating system. To receive a trading license, minimum standards must be met, but businesses that apply higher standards will be able to gain a 4- or 5-star rating in the ‘Animals Activity Star Rating System’, and thus will qualify for a longer license (e.g. 2 or 3 years as opposed to a one-year license) and pay a lowered license fee.

Considerations for reducing stress in animals

UK, VIC, QLD, NSW and SWISS all recognise the importance of reducing stress in animals in captivity or in the trade. These measures include the provision of hiding places away from the public, provision of environmental enrichment, and providing social enrichment, e.g., housing with conspecifics.

VIC: A secluded, darkened sleeping area for animals must be provided. Animals in view of the public must be removed from pens in shop windows at night or alternatively, the pens must be covered with opaque screens to exclude both light and the public view. Cages for rabbits, guinea pigs and mice must not be totally open-sided and must have a darkened private area. Reptile cages must be totally enclosed except for one viewing panel and must include cage furniture that allows total or partial concealment of the reptile.

NSW: Requires that staff and traders protect animals from distress and injury to ensure safety, wellbeing and psychological health.

Minimum ages of animals for sale

QLD: Immature animals unable to feed themselves must only be kept where adequate facilities and expertise are available for artificial rearing.

VIC: Minimum age of animals for sale (rabbits, guinea pigs, mice) is provided and weaned animals must be fully self-sufficient. Juvenile birds must be self-sufficient and should be fully feathered (moult permitting). Un-weaned animals must not be on the premises.

Powers for authorities to remove an animal from conditions causing distress

UK: Suitable powers are given to authorities to take an animal (3) (including its dependent offspring) into possession if he/she reasonably believes that the protected animal is suffering, or if a veterinary surgeon certifies that the animal is suffering or likely to suffer if its circumstances do not change. This means that no offence need be committed or proven for the confiscation. The veterinary surgeon has the authority to require the animal(3) to be euthanised on welfare grounds.

Prompt amendments of regulations possible to promote welfare

UK: and Scotland: Enabling powers allow prompt amendments of legislation for the effective protection of animal welfare.

Health Guarantees and provision of husbandry information

NSW and VIC: In an effort to protect consumers and improve the conditions of animals in trade environments, a seller must provide a health guarantee to replace or refund if the animal has poor health that has been confirmed by a veterinary surgeon (excluding accidents), or the animal dies or is euthanised as a result of a disease that is traceable to the point of sale. The refund must be 75% (VIC)/50% (NSW) of the purchase price. Alternatively the pet shop may offer a replacement with the same guarantee.

VIC: Pet buyers must be provided with literature about feeding, desexing, parasite control, health and husbandry, responsible pet ownership, and current legislation covering the registration of pet animals. Such information is to be evidence-based and should be prepared in consultation with relevant professionals. Information prepared by a herpetologist relating to specific reptiles being sold are also required to be provided to a purchaser.
Biosecurity

Biosecurity is considered important in many jurisdictions, and mandatory post-import quarantining rules are strict, especially in Australia and New Zealand. E.g., In Australia, on arrival of imported reptiles:

- Litter and absorbent materials in the transport containers must be destroyed and the containers disinfected or destroyed.
- Each animal must undergo a minimum of a 90 days post-arrival quarantine (PAQ) in a quarantine approved premises (QAP) and be inspected by a veterinarian and found free from signs of infectious disease and external parasites before release.
- During the quarantine period, the animal(s) is/are to be monitored daily for signs of illness and, if necessary, be subject to a clinical examination, tests and/or treatments, at the importer’s expense.
- All animals dying are to be subject to a post-mortem examination to determine the cause of death and the Australian Quarantine and Inspection Service (AQIS) is to be advised within 48 hours.

NSW and VIC: Traders are required to provide quarantine facilities, treatment, and veterinary care for all sick animals.

USA: Only three ports of entry are available for all non-US-origin pet birds imported into the United States (except from Canada), and a 30-day quarantine in specific facilities is required.15

Penalties

SG: Any person who contravenes the Animals and Birds Act will be liable to a fine not exceeding SGD $5,000 (HKD 28,775).16 For failures in the duty of care during the course of conducting an animal-related business, offenders are liable to a maximum fine of SGD $40,000 (HKD 229,748) and/or a two-year jail term for first convictions.17 For breaching pet shop licensing conditions, licensees are liable to a maximum fine of SGD $5,000 (HKD 28,775). Individuals who without reasonable excuse, refuse or fail to comply with an Agri-Food and Veterinary Authority of Singapore (AVA) written notice, shall be liable on conviction to a fine not exceeding $10,000 (HKD 57,437) or to imprisonment for a term not exceeding 6 months, or to both.

USA: In 2017, California became the first US State to prohibit the sale of commercially bred puppies, kittens and rabbits in pet shops, unless the animal was obtained from a public animal control agency or animal shelter.18

USA: In 2018, Ohio passed a law that went further and banned all non-rescue pet sales in pet shops, including non-commercial breeders and online sales.19

UK: Selling animals as pets without a license could result in both fines and imprisonment of up to 6 months.12 In addition, if a person is convicted of an offence while operating a pet shop, the court can make an order to cancel any license, and make an order to disqualify the licensee from holding a license.13

Ban in commercially bred animals

USA: In 2017, California became the first US State to prohibit the sale of commercially bred puppies, kittens and rabbits in pet shops, unless the animal was obtained from a public animal control agency or animal shelter.20

Penalties

USA: In 2018, Ohio passed a law that went further and banned all non-rescue pet sales in pet shops, including non-commercial breeders and online sales.19

USA: In 2022, New York became the latest US State to ban the sale of commercially bred puppies, kittens, and rabbits in pet stores, effective January 1, 2023.21

NSW and VIC: Traders are required to provide quarantine facilities, treatment, and veterinary care for all sick animals.

Penalties

Penalties for breaching pet shop licensing conditions, licensees are liable to a maximum fine of $10,000 (HKD 57,437) or to imprisonment for a term not exceeding 6 months, or to both.

Appendix I

Comments and Recommendations to the new Codes of Practice for Reptile Animal Trader Licensees

The new Codes of Practice (COP) for Reptile Animal Trader Licensees (ATLs)22 is a welcome document that will act as a first step in improving the conditions of reptiles in Hong Kong’s pet trade. It is hoped that this COP can be treated as a living document that would be continually updated in line with global best practices on species conservation, animal husbandry, welfare and disease prevention strategies.

There are a number of areas that can be considered for strengthening the COP prior to its implementation in 2023, noting that proper husbandry at the pet shops would serve to both uphold animal welfare standards and educate any visitors or potential buyers.

<table>
<thead>
<tr>
<th>Section (§) in COP for Pet Reptile ATLs</th>
<th>Comments</th>
<th>Suggestions for strengthening the COP and care of reptiles in the pet trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>§1.3 (c) The animals shall not be subject to conditions that would create fear or distress.</td>
<td>While stating that animals shall not be subject to conditions inducing fear or distress or handled inappropriately, no examples are provided.</td>
<td>1. Provide examples of conditions that create fear or distress.</td>
</tr>
<tr>
<td>§3.1 (b) The seller should, as far as reasonably possible, ensure that the purchaser has the knowledge, experience and facilities necessary to look after the reptile in a proper manner.</td>
<td>An example of such conditions is the presence of speaker systems close to animal enclosures.</td>
<td>2. Provide a “Pre-sale Screening Checklist,” such as those used in Singapore, to assist traders. Such lists ensure that necessary information is conveyed to the buyer, provide an impartial evaluation of their suitability as prospective exotic pet owners, and potentially reduce impulse purchases. Both staff and buyers must go through the checklist and sign the declaration to affirm veracity.</td>
</tr>
<tr>
<td>§4.2 (b) Environmental enrichments such as branches, hiding boxes and rocks, etc. must be used appropriate to the species being kept.</td>
<td>Access to hiding spaces is vital to all reptiles and reference to enrichments “appropriate to the species” introduces ambiguity. They are recommended only as an example of environmental enrichment.</td>
<td>3. Require that usable hiding spaces for all reptiles must be provided.</td>
</tr>
<tr>
<td>§4.3 (b) Instruments with which to measure the temperature and humidity must be available on the licensed premises and in working order. Ideally, such instruments should also be present and visible in every primary enclosure.</td>
<td>Maintaining temperature and humidity levels are critical in reptile husbandry. Monitoring and monitoring these parameters must be appropriately done to recreate the conditions of wild habitats as accurately as possible. Inadequate temperature and humidity can result in a range of disease conditions in reptiles, likely affecting their health and welfare.</td>
<td>4. Require instruments to measure temperature and humidity must be visible and utilised in every primary enclosure enabling easy checks during the day. There should be one instrument visible at two distant ends of the enclosure to ensure proper maintenance of the electrical appliances involved and to ensure species-specific thermal gradients.</td>
</tr>
<tr>
<td>§4.3 (c) Heat lamps must not be placed too close to the animal that they may cause thermal injury. Measures shall be taken to prevent direct contact with heat lamps.</td>
<td>Artificial light and heat lamps are electrical hazards and can be dangerous to animals and the public alike if improperly used. Thermal burns on reptiles are commonly seen in local veterinary practice, often due to improper lamp placement, causing the lamp to drop into the enclosure, lack of protective lamp guards, and equipment failure (Part 1 Section 5.3.2).</td>
<td>5. Provide examples of measures to prevent direct contact with heat-producing bulbs, e.g., installing protective metal guards around the heat lamps. Measures must not prevent an electrical risk (e.g., via the use of inappropriate materials that cause overheating) or impair proper function. Provide guidance to minimise electrical/fire hazards (e.g., preventing electrical circuit overload).</td>
</tr>
</tbody>
</table>
Suggestions for strengthening the COP and care of reptiles in the pet trade

6. Provide guidance on requirements for proper usage of artificial UV light sources, for example:
   - The correct UVB bulb/index and placement is essential and should be specified and species-specific.
   - Ordinary glass or plastics placed between the UVB lamp and animal can block transmission of UVB.
   - Although wire cages used around UVB lamps can protect animals from accidental contact, the bar spacing must be large enough to allow UVB light to transmit and dissipate excess heat.
   - Apart from replacing bulbs at intervals recommended by the manufacturer, special UVB light meters (e.g., solarmeters) should be used by traders to monitor UVB light bulbs and to identify inefficient or decreasing output.

7. Require that all enclosure facilities such as breeding tanks be large enough to allow UVB light to transmit and dissipate excess heat.
   - Most reptiles in captivity are not provided with sufficient, if any, natural unfiltered sunlight, hence proper UVB lamp usage and maintenance, as well as adequate levels of UVB is critical to promote good health.

8. Provide a training syllabus and a list of recognised training providers.
   - Require that a list of training providers be provided to the new owner on the species being kept. The list includes the date of training and the name of the training provider.

9. Require that all important information is conveyed in writing and verbally to the buyer. This will markedly improve PPO knowledge of welfare, husbandry, and legal obligations.
   - Provide “Pre-Sale Screening Checklist” (as discussed in suggestion 2) and provide to both ATL holders and the purchaser, ensuring all important information is conveyed.

10. Guide traders on suitable mechanical and biological biosecurity measures should be in place at home.
    - Although terraria are less sensitive to poorer water quality, complete water changes are required to keep reptiles and bacterial levels low unless the filtration system in place is extremely powerful and well maintained.

11. Provide examples of common signs of illnesses in reptiles, e.g., bleeding, diarrhea, regurgitation, abnormal respiratory noises, and signs (e.g., watery nose, water eyes, open mouth breathing), lethargy (excessive tiredness), straining to defecate/ urinate, difficulty passing eggs, passing blood, swelling of any body tissue, skin or shell lesions, etc.
### COP Annex - Detailed Requirements for various species

**Grouping and omission of species:** Not all species of reptiles common in trade are covered in the tables in the Annex, and several species are grouped, indicating they have the same specific requirements.

Although some species of reptiles in the wild may overlap the same or similar regions and biomes, grouping them to indicate that they have the same requirements is not ideal. Research shows that different species have different thermoregulatory/basking behaviours (e.g., crepuscular or shade dweller, partial sun or occasional basking, open or partial sun basking, mid-day sun basking), and may seek out different microclimates. Experts in reptile nutrition recommend 80% of the tortoises' diet to be made up of grasses, grass hays, species-specific native plants and high-quality commercial tortoise diets, with the remaining 20% of the diet made up of a variety of dark leafy greens, Mulberry tree leaves, grape leaves, backyard weeds, etc. Dietary variety is also considered important. In the detailed requirements for Tropical non-forest dwelling tortoises table, alfalfa hay is mentioned in the Feeding section. Feeding of alfalfa hay is usually considered appropriate in limited amounts, e.g., in certain growing or sick animals. However, it is not usually recommended as a staple diet in large quantities for most species, as its protein levels are higher than other grass hays and above what many tortoise species naturally consume in the wild, hence it may be excessive.

**Humidity guidance** is not provided in the Annex tables. As with other environmental parameters, a proper humidity level is important to promote good health, and such requirements are species-specific. Too low humidity can cause dyscydysis (abnormal shedding) in many species and may contribute to shell issues in some tortoises, while excessive humidity can lead to dermatitis or respiratory diseases.

**Specific space requirements and the minimum area** are only provided in the Annex tables. By having the minimum area requirements only in the Annex Tables (currently excluded from the main text of the COP), it is unclear whether unlisted species have the same requirements. Stocking densities and prohibition of overcrowding are not explicit. To ensure that a space is not overcrowded, it must allow room to roam and possess enough facilities for all animals in the enclosure at any given time.

The suitability of certain reptile species as pets is a concern. For example, it is stated in the COP that Green iguanas can grow up to 1.5 m in length, can live for 20 years, but are difficult to be properly cared for in captivity. In addition, African spurred tortoises (G. sulcata) and Aldabra giant tortoises (A. gigantea) are noted to live more than 100 years, with G. sulcata capable of reaching 200 years. In addition, it is noted that prospective owners must be made aware of the adult size and therefore the requirement for large amounts of space. Pancake tortoises are also highlighted in the shortlist, despite being Critically Endangered, sourced from extremely specialised microhabitats, and with wild-caught individuals currently banned from international trade. Their trade should not be encouraged. The suitability of all such species in the average Hong Kong apartment is highly questionable.

**Annex - Detailed requirements for Tropical non-forest dwelling tortoises and Green iguanas**

Exclude certain reptile species from the pet trade, or implement a system to ensure that PPOs who wish to acquire these species have the capability and ability to adequately care for them. Implement a “Positive List” (a list of pre-screened and approved species permitted to be traded). Refer to Part II 3.3 and Part II Recommendations (6k) for further discussion.

### General

**Breeding of animals**

Feeding of live prey (especially mammals, e.g., rats and mice) to carnivorous reptiles has been discouraged by many international experts and remains illegal in many countries. The reasons against feeding of live prey include the following:
- Live prey can attack reptiles, increasing risk of injury to captive reptiles.
- Live prey are not ideal. Research shows that different species have different thermoregulatory/basking behaviours (e.g., crepuscular or shade dweller, partial sun or occasional basking, open or partial sun basking, mid-day sun basking), and may seek out different microclimates.
- Gut-loading insects with a high quality, specialised nutritious diet (to increase nutritional content available to the reptile).

**Quarantining requirements upon arrival**

Although it is mentioned in §6.2 (C) that a reptile with suspected illness or injury be immediately isolated, the COP does not address any quarantining requirement for newly arrived animals. Isolation of new reptiles into the existing stock is important to prevent parasitic or infectious diseases from being introduced to the existing animals in the premises.

**Strict biosecurity measures are important to protect animals and humans from infectious diseases.**

**Food animal husbandry requirements and humane killing of feeder animals**

Feeding of live prey (especially mammals, e.g., rats and mice) to carnivorous reptiles has been discouraged by many international experts and remains illegal in many countries. The reasons against feeding of live prey include the following:
- Live prey can attack reptiles, increasing risk of injury to captive reptiles.
- It is inhumane to place live, frightened prey with a predator in captivity. Other forms of enrichment should be provided instead.

In addition, food/feeder animals (animals used as reptile food) may act as a vector/fomite for parasites and other infectious diseases that could be passed to the reptiles or human handlers.

**Include requirements for husbandry and welfare of feeder animals, including the provision of a nutritious diet (to increase nutritional content available to the reptile).**

**Minimum age for purchasing a reptile pet**

Reptiles have complex husbandry requirements, and their proper care requires a range of careful considerations and financial abilities.

**Stipulate a minimum age, e.g., 18 years old, for purchasing a reptile pet.**