Ecological Baseline Survey For Ecological Assessment

(Important Note :

The guidance note is intended for general reference only. You are advised to refer to and follow the requirements in the Environmental Impact Assessment Ordinance (Cap 499) and the Technical Memorandum on the Environmental Impact Assessment (EIA) Process. Each case has to be considered on individual merits. This guidance note serves to provide some good practices on EIA and was developed in consultation with the EIA Ordinance Users Liaison Groups and the Advisory Council on the Environment. This guidance note is subject to revision without prior notice. You are advised to make reference to the guidance note current to the date. Any enquiry on this guidance note should be directed to the EIA Ordinance Register Office of EPD on 27th Floor, Southorn Centre, 130 Hennessy Road, Wan Chai, Hong Kong. (Telephone: 2835-1835, Faxline: 2147-0894), or through the EIA Ordinance web site (www.info.gov.hk/epd/eia)

1 Purpose

1.1 According to the Technical Memorandum on Environmental Impact Assessment Process (TM) Annex 16 Section 5, an ecological baseline study is required in the process of an ecological assessment to provide adequate and accurate ecological baseline information of the proposed development and its vicinity. This note aims at providing the general guidelines for conducting an ecological baseline survey in order to fulfil the requirements stipulated in the TM in respect of ecological assessment for a proposed development.

1.2 For the purpose of these guidelines, "habitat survey", "field survey" or similar terms appeared in Annex 16 of the TM and study briefs for ecological assessment would be collectively referred to as "ecological baseline survey".

2 Duration of Survey

2.1 According to the TM Annex 16, Section 5.1.4 states that the duration of an "ecological baseline survey" required shall be defined in the Environmental Impact Assessment (EIA) study brief (SB) issued under the EIA Ordinance. As stipulated in the TM Annex 16 Section 5.1.1, the objective of the baseline study of an ecological assessment is to provide adequate and accurate ecological baseline information. The ecological baseline survey forms an important part of the baseline study to:

(a) provide first hand, specific and updated information on the existing ecological characters of the proposed development site and its vicinity;
(b) verify information obtained from the review of existing information (TM Annex 16 Section 5.1.2.1); and
(c) fill existing information gaps.

2.2 To fulfil the above-mentioned objective, the duration of an ecological baseline survey should be long enough for gathering the necessary baseline data. Generally, the duration of an ecological baseline survey should be commensurate with the scale of the proposed development at hand, and the duration specified in the SB should be regarded as the minimum requirement. Representative information could be obtained in a reasonable period of time if appropriate survey and sampling methods are adopted. An unnecessarily long ecological baseline survey may not yield useful additional information but may impose difficulties on the project proponent in programming and project implementation.

2.3 In most cases, it is impractical for an ecological baseline survey to provide exhaustive ecological information of a site (e.g. an exhaustive species list). It should also be noted that ecological assessment of an EIA differs from an academic study (e.g. autecology of a certain species) in that the latter aims at revealing specific biological information in great details or depth. An ecological baseline survey is more general in nature and mainly aims at revealing the general ecological profile of the study area to facilitate the subsequent impact assessment. Nevertheless, further specific information may be required if the need is stipulated in the SB or identified in the course of the ecological baseline survey.

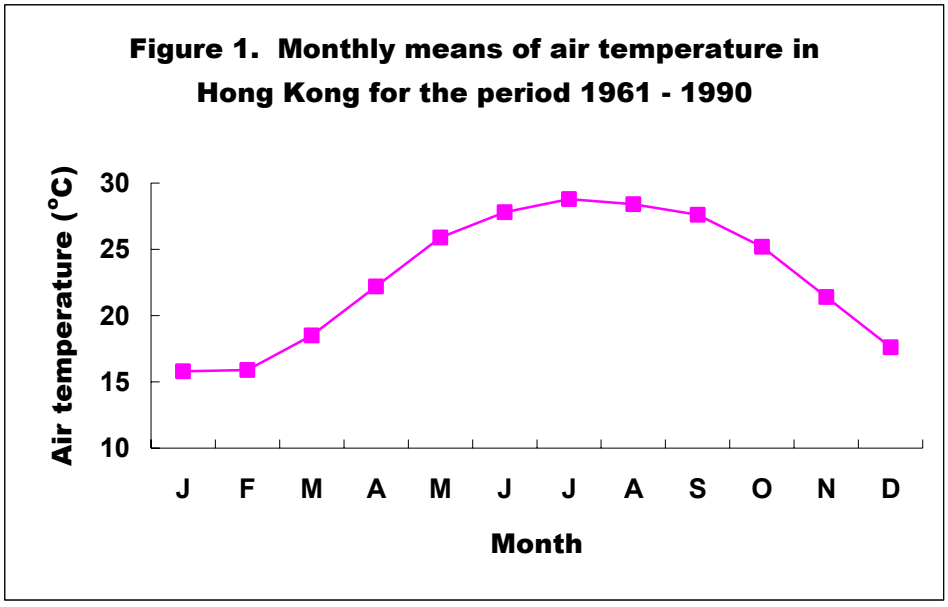
2.4 The duration of an ecological baseline survey for a proposed development is generally dependent on the following factors:

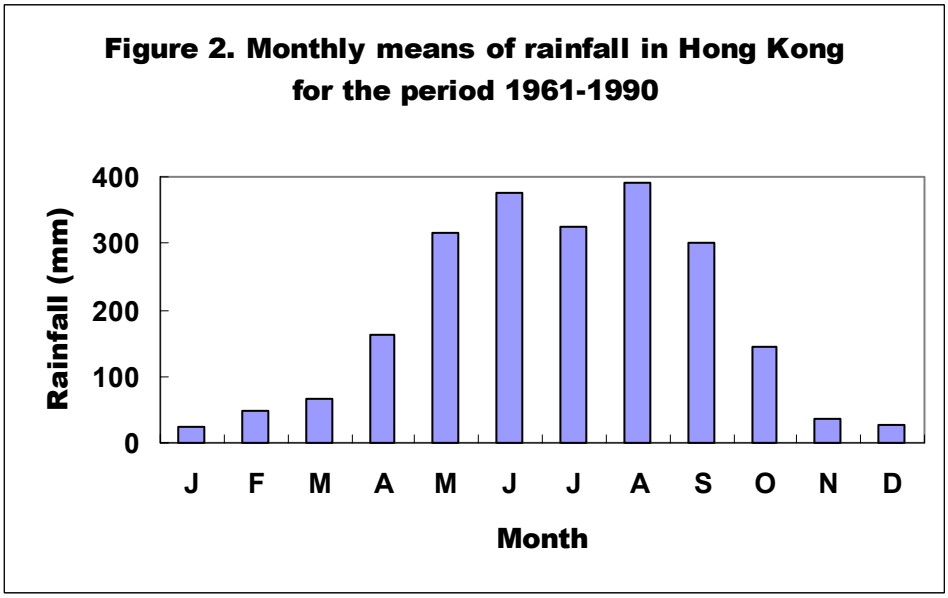
(a) the geographical coverage of the study area;
(b) the diversity of habitats within the study area;
(c) the diversity of flora and fauna within the study area;
(d) presence of ecologically important species or habitats which exhibit distinct seasonal patterns (e.g. migratory animals, seasonal wetlands);
(e) ecological information of the study area available;

2.5 When considering the above factors to determine the duration of an ecological baseline survey required, the criteria for evaluating a site/habitat given in the TM Annex 8 should be adopted wherever applicable.

3 Seasonality

3.1 In accordance with the TM Annex 16 Section 5.1.4, an ecological survey of a longer duration with regard to seasonal changes may be required. Hong Kong has a sub-tropical climate and hence does not have a distinct four-seasons climate. Typically, Hong Kong has a wet hot “summer” and a dry cool “winter”. (The average monthly temperature and rainfall are shown in Figures 1 and 2.) These two periods may be referred as “wet” season (April to October) and “dry” season (November to March).





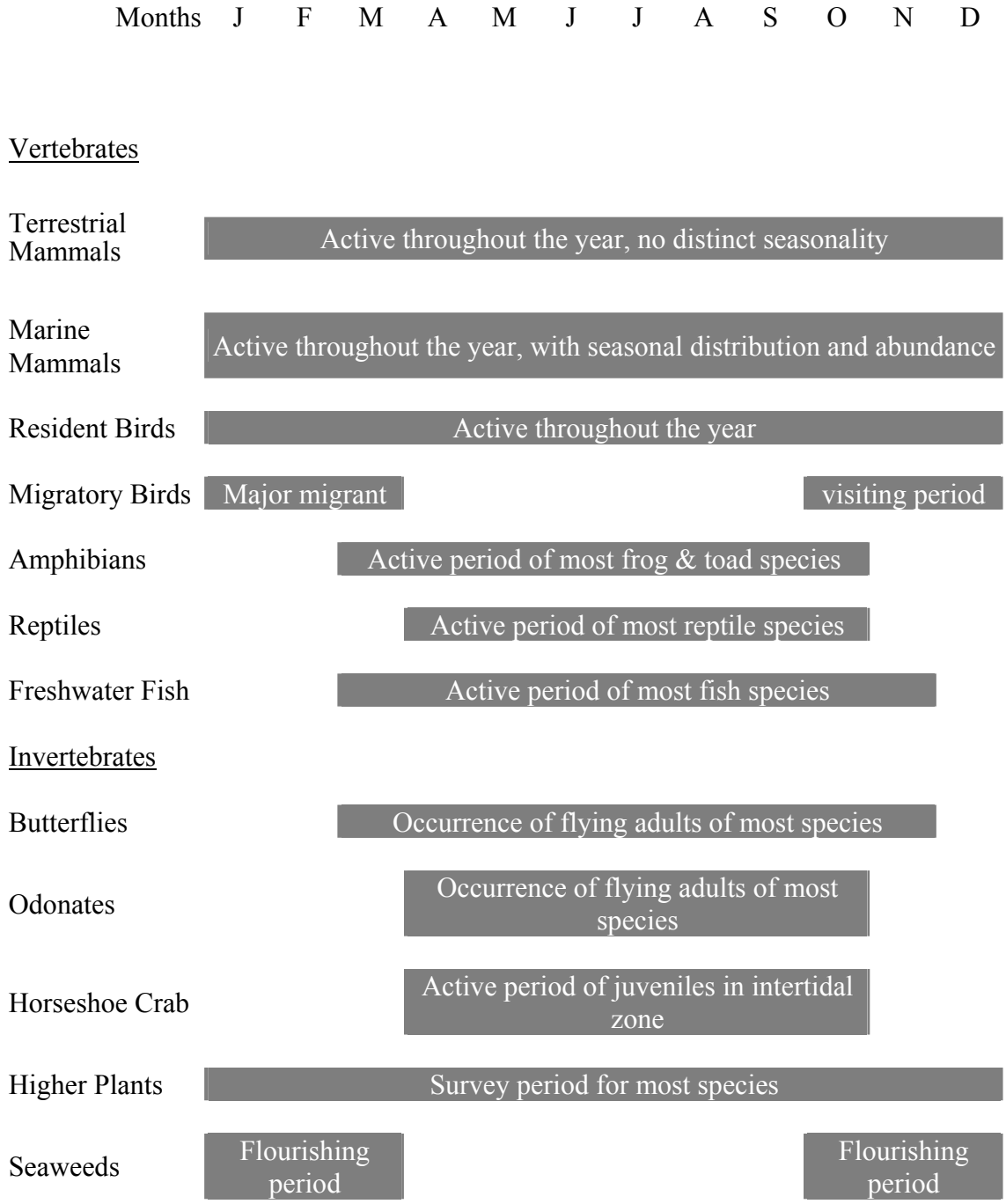
Data Source : Hong Kong Observatory Almanac, Hong Kong Observatory (2000)

3.2 In the marine environment, there are also seasonal changes. During the wet season, the discharge of the Pearl River makes the western waters remarkably low in salinity (can be lower than 10 ppt) while the eastern waters remain oceanic (salinity generally above 30 ppt). In the dry season when the freshwater discharge is much reduced, most of our waters are of rather uniformly high salinity. There are also some differences in water temperature and consequently dissolved oxygen levels between the two seasons. The range can be from under 10°C to over 30°C, and from less than 2 mg/L of dissolved oxygen in wet season to over 8 mg/L in dry months.

3.3 Different wildlife groups may differ in their activities and hence conspicuousness at different times of the year, as a result of difference in breeding seasons, migratory behaviour, or physiological changes (e.g. low temperature restricts

activity of poikilotherms but not homeotherms). Therefore, to obtain good results, a target species group should be surveyed at the time of the year when the group is more active, conspicuous or easy to be identified (see Figure 3).

Figure 3: Time of the year to survey major floral and faunal groups



3.4 It should be noted that Figure 3 only serves as a reference for the period of a year when different faunal or floral groups are generally more conspicuous. The actual timing of survey may need to be adjusted if a target species to be assessed has special seasonal or diurnal pattern, e.g. it would be more effective to conduct survey for amphibians and reptiles at night time during wet season.

4 Types of Survey Period

4.1 On the basis of the factors described in Section 2.4 above and the seasonal patterns of target species groups reviewed in Section 3.3, the duration of an ecological baseline survey required will be determined. A 4-month ecological baseline survey will generally be required as long as some ecological impacts are anticipated from the proposed development. More specific considerations in respect of the determination of different survey durations are given below:

(a) 4-month survey
- The study area consists of common habitats.
- The 4-month period should provide reasonable amount of information on general wildlife use of the study area.
- Some surveys in the wet season are necessary if there are stream courses or wetlands in the study area.

(b) 6-month survey
- The study area consists of relatively diverse habitats and species.
- A certain extent of seasonal patterns in wildlife use of the study area is anticipated.
- Some surveys in the wet season are necessary if there are streams courses or wetlands in the study area.

(c) 9-month survey
- The study area consists of diverse habitats and species.
- A certain target species with marked seasonality is likely to be present in the study area.

4.2 The above requirements could vary from case to case depending on the wildlife groups to be surveyed. It should be noted that a special requirement of 12-month survey has been stipulated in the Town Planning Board Guidelines for Developments Within Deep Bay Area.

5 Survey Effort

5.1 The project proponent and his environmental consultants shall make sure that the entire duration of survey specified in the EIA study brief is well covered. Samplings undertaken at different times of the survey period should avoid any bias in results towards a particular time of the period. For instance, conducting surveys only at the first and sixth months for a 6-month ecological baseline survey may miss some important data in between and thus unable to fully reveal wildlife use patterns of the study area.

5.2 To fulfil the requirements of TM in providing adequate and accurate ecological baseline information (TM Annex 16 Section 5.1), the surveys or samplings for individual target species groups should be conducted at appropriate intervals or frequencies. For target species groups which show little variations over short period of time (e.g. woody plants), they can be surveyed at longer intervals. However, for species groups which fluctuate greatly in abundance (e.g. birds) or are difficult to detect (e.g. some cryptic or secretive species), higher survey

frequencies at shorter intervals may be necessary. There should also be adequate samplings/surveys to ensure that the data obtained are representative.

5.3 In addition to obtaining an inventory of the flora and fauna at a particular site, the ecological baseline survey should also aim at providing insight into the ecological functions and importance of the habitats on site and to address other specific requirements as stipulated in the SB. For instance, during a bird survey, any notable behaviours such as feeding, roosting or breeding of the birds and the associated habitats and vegetation where they have such behaviours should be recorded. Moreover, any special species-habitat relationships observed during the survey should be noted down. Such information will be useful for impact identification, evaluation and mitigation.

5.4 As ecological impact assessment is an iterative process. It requires constant review of the information gathered to decide for further actions, such as extending the survey period. The project proponent could always increase the survey effort so as to draw up a representative ecological profile of the study area, particularly if he finds in the course of the ecological baseline survey certain ecologically important species. In such cases, more attention and additional information are needed in order to assess the impacts and derive some appropriate mitigation measures.

6 Other Considerations

6.1 According to the TM Annex 16 Section 5.1.4, sensitive wildlife groups shall be surveyed at the appropriate season(s) of a year, and the actual duration of survey shall depend on the wildlife groups to be surveyed.

6.2 Each study has its specific constraints and, probably, unique circumstances where professional judgment is essential. Therefore, while the requirements of the ecological baseline survey will be stipulated in the EIA study brief as specific as possible, it may not be possible nor appropriate to specify strictly every single detail (e.g. the exact numbers, dates, routes, methodology, etc.) of the ecological baseline survey required.

6.3 Apart from duration and frequency, there are other important aspects of an ecological baseline survey that should be taken into considerations. To obtain accurate and representative data, appropriate sampling methodology, which should be sound and scientific (TM Annex 16 Section 5.1.2.2), should be adopted. The surveys/samplings should be carried out by professionals with adequate knowledge and field experience of the target species groups to be surveyed.

Nature Conservation & Marine Conservation Divisions
Agriculture, Fisheries and Conservation Department
in conjunction with Environmental Protection Department

Date of issue : January 2002