

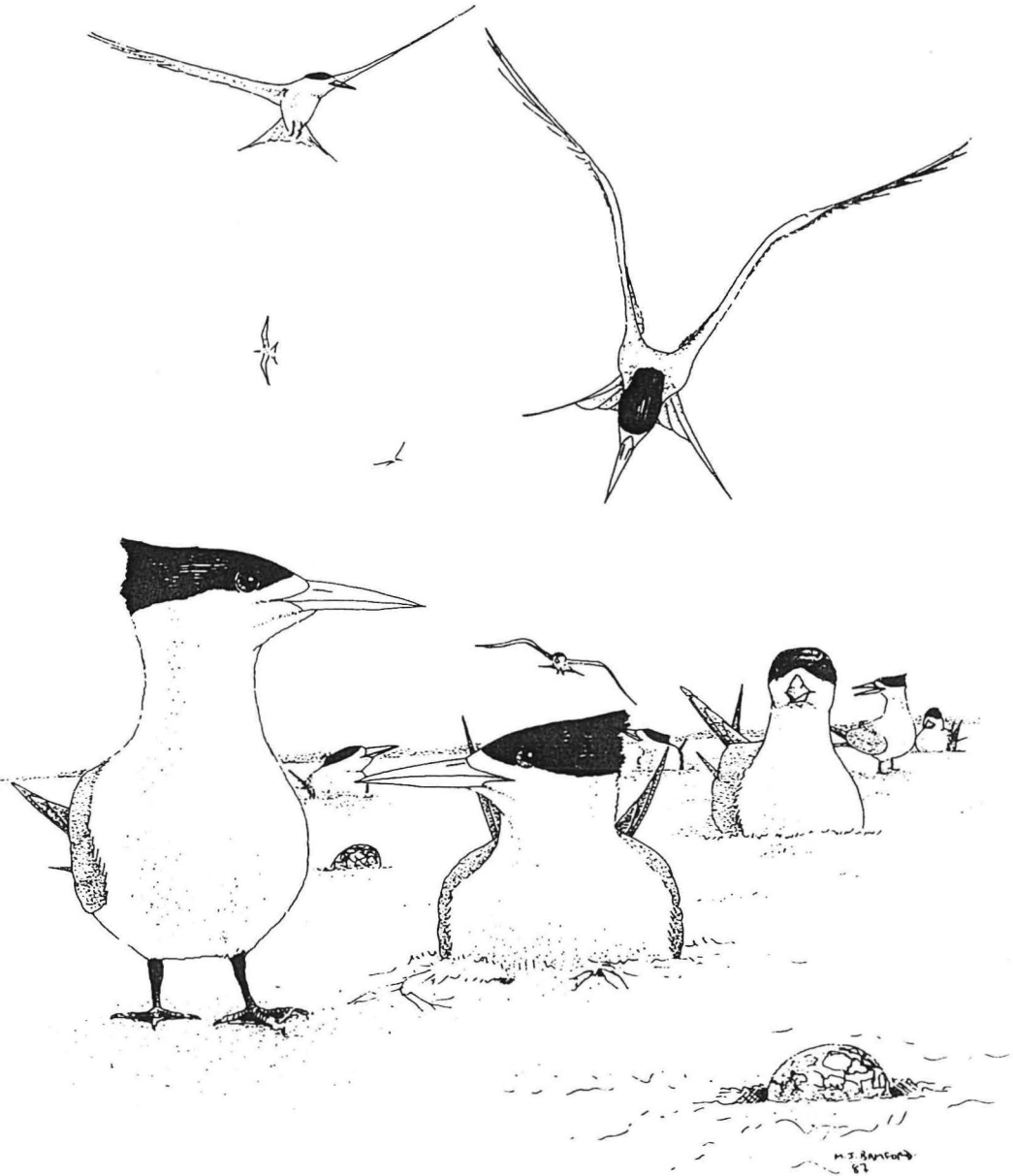
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# THE SEABIRDS OF PENGUIN ISLAND

Western Australia



## Crested Tern

## THE CRESTED TERN

Terns are predatory, primarily fish-eating, relatives of the gulls and skuas (Suborder Lari). The tern sub-family (Sterninae) probably originated in tropical waters, where today there is the greatest number of species, although representatives of the group inhabit seas and inland waters from the Arctic to the Antarctic.

The Crested Tern *Sterna bergii* is a 'typical' species with grey wings and back, black cap and white underparts, a fine, sharp bill and short legs. It is widely distributed in coastal, sub-tropical and tropical, waters of the Indian Ocean (including the Red and Arabian Seas) and the Indo- and western Pacific. The most common and widespread tern species in Australian waters, it occurs all around the continental coastline and frequents the estuaries and archipelagos. It is also a conspicuous species in South Africa, where it is known as the Swift Tern. Locally, Crested Terns are sometimes called Divers because they catch their fish by plunging into the water.

About 1500 pairs of Crested Terns nest on small offshore islands and salt lake islets in the Fremantle area.

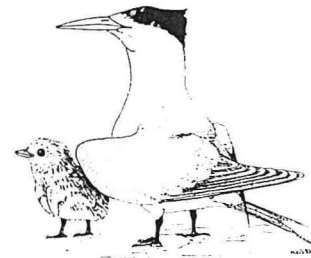
## BREEDING COLONIES

The colony areas selected by Crested Terns overlook the sea or are visibly surrounded by water. A fairly level ground surface, low open vegetation and the presence of nesting gulls are also important characteristics of the breeding habitat. Unlike the Silver Gulls, with which they associate when breeding, individual Crested Terns have no long term attachment to the nest site or colony. Colony areas are 'traditional' but may be abandoned and not used for several years. In the Fremantle area up to four breeding sites may be in use in any season.

Crested Terns form densely packed colonies in which the distance between nest-scrapes is usually only 25 to 40cm. Four hundred pairs might occupy an area of less than 200 square metres. Pairs seeking nest sites are strongly attracted to sitting or incubating birds of their own species and it is left to the aggressive pecking of these neighbours to establish the spacing. Not only are nests close together but, in the centre of a large colony, the

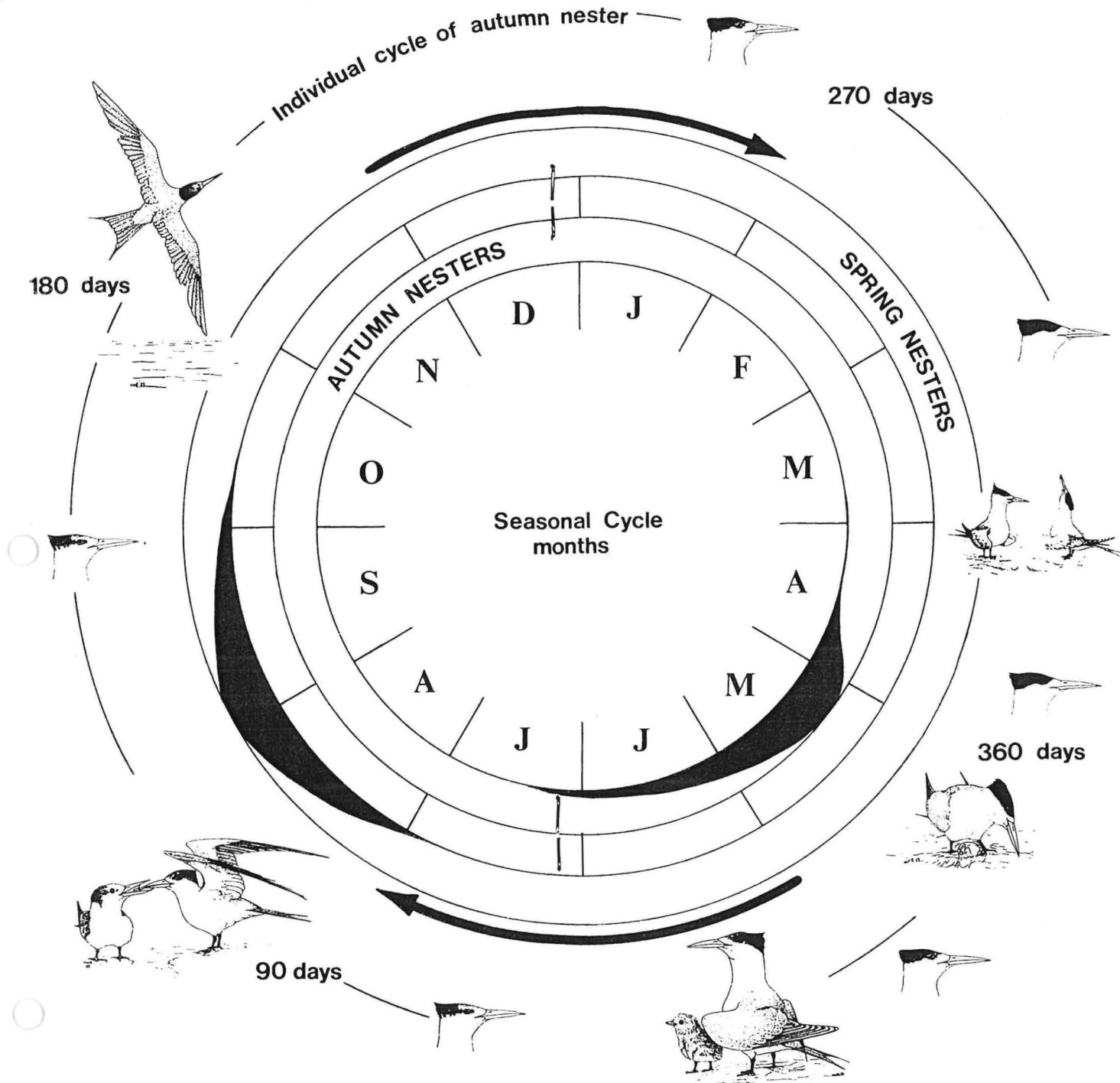
laying dates of 200 or more pairs may occur within a 10 day interval. This 'synchrony' apparently results from the stimulation of many pairs through aerial group displays, or 'mass flights', prior to colony formation. The presence of the first 'sitting' terns further accelerates laying in the rest of the breeding flock.

Nests and eggs in Crested Tern colonies are conspicuous and the breeding birds rarely harass intruders. Other ground nesting terns which space themselves out, partially concealing eggs and progeny, often attack trespassers in the colony. The significance of the Crested Terns' dense colonies lies in the role of breeding synchrony in maximising breeding success. By ensuring that most of the available pairs nest at the same time at any location, Crested Terns reduce the period over which the colony area could be discovered by mammalian predators. They also decrease each individual's prospect of losing young by 'swamping' any intruder with numbers. Other adaptations complement this strategy: colony areas are only occupied at the last minute and are occasionally changed; usually only one egg is laid, thus reducing the incubation stage; chicks are well developed at hatching and can leave the vulnerable colony area within 3-5 days; chicks develop flight feathers early allowing them to fledge as soon as they reach the required size at 5-6 weeks of age.



## BREEDING CYCLES

Individual Crested Terns or breeding pairs nest circannually (ie. at around 12 monthly intervals). In fact these terns remain capable of laying for 11-13 weeks in the annual cycle. This is the 'nuptial' period during which individuals will have complete black caps, as shown on the breeding calendar overleaf. At the end of this 'nuptial' period the cap begins to



moult and the black feathers start being replaced by the mottled, non-breeding or 'eclipse' plumage. Usually this 'post-nuptial' moult occurs following breeding. A 'basic' moult involving body, wing and tail feathers takes place whilst an individual is not breeding and is in eclipse plumage.

## BREEDING SEASONS AND POPULATIONS

Within the population there are two marked peaks in egg-laying, one in autumn (April-June) and a second in spring (August-October). During the intervening period (July) little nesting takes place. As these terns have circannual cycles there is a strong tendency for individuals to nest during the same sub-season each year; thus they constitute two semi-isolated sub-populations.

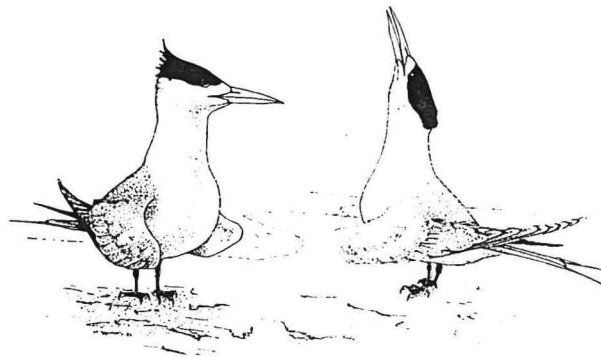
## SOCIAL BEHAVIOUR

Crested Terns are gregarious birds which roost socially and form special pre-breeding flocks or 'clubs' in which courtship display and mating occurs. The Penguin Island sand spit is a favoured club and roost site.



Close examination of any flock will usually reveal nuptial and eclipse adults representing the two sub-populations. Immatures with greyish caps and brownish, rather than pale grey, wing tips will also be present. Nuptial terns often stand in pairs shoulder to shoulder or in small distinct groups. They are alert and excitable and potential mates may 'parade', cling one another with short stuttering steps, heads raised with bills pointed slightly downwards, crests erect and wings drooping (stretch posture).

This posture indicates strong aggressive intent. An intimidated bird will raise its bill skywards and stand with crest sleeked (pole posture). This is a typical appeasement display, the antithesis of its aggressive counterpart. The appeasement display changes the intimidatory line between the eye and bill, accentuated by the black cap, from the horizontal to the vertical.



Bachelor terns may fly into or over the club carrying a fish crosswise in the bill and calling "Kerrick Kerrick". The nuptial flock becomes excited and often a 'mass flight' follows in which many of the pre-breeding terns fly off in a loose group, calling noisily. Re-settling often leads to a renewed bout of ground courtship and copulations. Males may present a fish to females whilst displaying. This may be accepted and swallowed or carried by either bird in a spiral upflight. In this display, a pair (sometimes more birds) ascend to a considerable height, spiralling upwards with rapid wing beats and gradually coming together. At the summit the terns are close together and descend in a steeper, spiralling mirror glide in which each bird images the movements of the other.



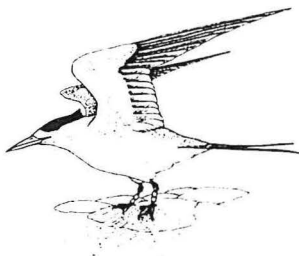
Eclipse adults may also carry fish into the roost. Such birds will be feeding their young from the previous breeding season. In Crested Terns, post-fledgling care often continues for four months or more.

## CONSERVATION AND RESEARCH

Human disturbance at breeding sites during the early stages of colony formation can cause desertion. Gulls will take unguarded eggs even from established colonies if these are persistently disturbed. In recent years, nesting has occurred on nearby Seal Island and this reserve should not be visited between August and December. The northern end of Penguin Island is a bird sanctuary in which nesting terns are a management priority. Public access is not permitted.

Detailed research on the biology of Crested Terns was conducted by a Murdoch University scientist between 1979 and 1984. Many terns were banded and some surviving breeding adults still carry individual colour band combinations. These terns have a colour and numbered metal band on the left leg and two colours on the right (note should be taken of the upper and lower colours). Long term records of marked terns will be invaluable in estimating recruitment, survivorship and longevity.

Bands found on dead terns also provide valuable information on mortality and movements. These bands should be returned to the nearest C.A.L.M. office or to the Australian National Parks and Wildlife Service (ANPWS) Canberra.



Prepared for the Department of Conservation and Land Management by J.N. Dunlop and M.J. Bamford.

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