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To: W.A. Marine Turtle Program Volunteers and Assistants

Progress Report on Beach Work - Western Australian Marine Turtle Project:
1990-91 Season to 21 December 1990.

Observations prior to the expected period of major activity by nesting green turtles at Western Australian rookeries for the 1990/91 season suggested that we were in for a poor green turtle nesting effort this year. North-eastern Australian rookeries were also predicted to be heading for a very low effort.

People assisting with our work in W.A. were advised of the possibility of a very poor green turtle season this year prior to commencing their participation in the seasons beach monitoring and tagging work, and have now had the opportunity to see first hand what has occurred. In the Pilbara-Gascoyne region in particular, very few green turtles have attempted nesting, with numbers being very much lower even than for the comparatively poor 1989/90 season, during which the majority of present volunteers actually commenced their work.

Because it is perhaps discouraging to be out looking for turtles when practically none are turning up, I am taking this opportunity to advise you all of what has happened so far, and to encourage your continuing effort. Nature is subject to cyclic variations, and it is very important for us to document troughs in these cycles, as well as doing work when the animals are more abundant.

Rookeries being worked 1990/91 season	Breeding Species Present
Ningaloo Marine Park	Green, Hawksbill, Loggerhead
Muiron Islands	Green, Hawksbill, Loggerhead
Barrow Island	Green, Flatback
Varanus Island (Lowendals)	Green, Hawksbill, Flatback
Rosemary Island	Hawksbill, Flatback
Munda Beach	Flatback
Lacepedes (West Island)	Green, Flatback, Hawksbill

Green Turtle

The bulk of beach work in previous years has focussed on the green turtle, undoubtedly the most abundant of the Western Australian breeding marine turtles. Substantial numbers of breeding females have previously been tagged at the Lacepede Islands and Barrow Island rookeries over the 4 seasons 1986/87 through 1989/90, and remigrants (females returning to a rookery to breed again) were observed at both rookeries during the 1989/90 season.

Sustained monitoring of Ningaloo Marine Park beaches was commenced on 29 November 1990. Prior to Christmas 1990, very few turtles of any species had been found beaching. Only the odd green turtle was seen.

A short visit (2 nights) to South Muiron Island mid-December 1990 resulted in only 2 green turtles being tagged.

Beach observations at Barrow Island during November and early December 1990 detected practically no evidence of nesting green turtles.

Two visits were made to the Lacepede Islands.

The first, over the period 11-14 October 1990, was primarily for purposes of a film project. Beach counts on the 11 and 12 suggested a maximum of 20-25 turtles coming ashore per night. Nine females were tagged from limited opportunities on the 12th.

A further week of field work from 13-20 December 1990 showed peak numbers of turtles coming ashore for nesting had risen approximately 5-6 fold, with between 100 and 120 turtles on the beach nightly over 15-18 December.

These higher numbers were recorded on an increasing spring tide cycle, with the greatest numbers coming ashore preceding the maximum tidal range by a day or two. Quite interestingly, this particular response pattern was similar to one recorded in similar circumstances at Barrow Island during the 1989/90 season.

We also noted that very rough weather commencing on December 14, which did not abate until the mid-morning of December 15, apparently deterred many turtles from coming ashore on the night of 14/15 December. Rough weather during previous field work at the Lacepede Islands in mid-November 1988 was noted to have had a similar deterrent effect. Cyclones affecting Barrow Island and Ningaloo Marine Park beaches January-February 1990 effectively ended nesting at those places last season.

The particular observations of green turtle behaviour noted above have been made incidental to our main focus of beach work, but do strongly suggest that these green turtles are greatly influenced in their short-term nesting behaviour by prevailing tide state and weather conditions. The analyses mentioned were only possible because good beach count data were available for the manageable but reasonably large numbers of turtles coming ashore at the particular localities at the times mentioned. Please continue your efforts in this regard.

Actual numbers of female green turtles beaching at the Lacepede Islands in December 1990 were no more than about 15% of the peak numbers counted ashore there during December 1989. Further information from the current tagging data showed that up to half the turtles ashore each night this season were making a repeat visit to the beach, so that no more than around 60 new turtles were encountered on any night. The progressive tagging and observation data for the week suggested that the total nesting population at that time was no more than 6 or 7 hundred females. Another 203 adult females were tagged. One of the turtles also seen at this time had been tagged during the October visit.

Allowing for some turnover of females attending the Lacepedes West Island beach during the 1990/91 season, it still seems likely that less than 1 000 female green turtles will have nested there this season. By way of comparison, in excess of 800 turtles were seen ashore at this rookery on some nights during the 1989/90 season.

Noting the much lower numbers of green turtles attending the Barrow Island and Ningaloo beaches over the 1989/90 season relative to the Lacepedes, and the information above, it seems that the reduction in nesting abundance at all three rookeries has been similar this season.

The scarcity of green turtle data for the two southern rookeries pre-Christmas 1990 prevents any further analysis at this point. The Lacepedes data do however provide some additional insights.

The first remigrant green turtles were seen at the Lacepedes and Barrow Island rookeries last season.

A further 12 remigrant green turtles were seen at the Lacepedes on our December 1990 visit. These comprised 5 turtles from the 1986/87 season group and 7 from the 1987/88 season group. We have now seen 25 remigrants from the 1986/87 group (420 tagged) and only 10 from the 1987/88 group (1 100 tagged).

The apparent difference in remigration responses of turtles from these two groups to date does not have any easy explanation. We have nevertheless now observed a range of remigration intervals of from 2-4 years, and seen a greater rate of remigration by turtles from the 1986/87 season group. Proportionately, we also have more 4 year remigrants from the 1986/87 group this year than 3 year remigrants from the 1987/88 group, and more remigrants among the smaller number of 1990/91 season nesters than previously (1989/90 season).

Barrow Island observers saw 2 three-year remigrants during the 1989/90 season. It was anticipated that tagged remigrants might still be detected there this season,

even with much reduced numbers of nesting turtles; one three-year remigrant from the 1987/88 group has been reported there since the New Year.

Observations on the double-tagged remigrants seen at the Lacepedes in the past two seasons, and the progressive reports of recoveries of Lacepede tagged green turtles on their feeding grounds since work commenced have also allowed some preliminary assessment of rates of tag loss from the tagged turtles. An average around 5% loss per annum for tags seems likely for the 1986/87 group turtles, but reasons for loss of tags and the pattern of loss almost certainly is not adequately described by this simple calculation. However, all turtles in this first group were double tagged initially, so most would be expected to still retain one or both tags presently.

Interpretation of tag loss/retention observations for the 1987/88 group of Lacepede tagged green turtles is not so easy. Only 42% of turtles in this group were double tagged initially, and only very few remigrants have been seen to date. Collectively, the tag profiles of the 10 remigrants seen in 1989/90 and 1990/91 are consistent with the 1986/87 group rate of loss estimate and initial tagging data. In contrast, the feeding ground recovery reports are not particularly helpful - all recoveries have been for turtles as originally tagged. It would, of course, be great apparently to have solved some sort of problem leading to loss of tags in our first year group with this, the second Lacepede group, but I don't think this conclusion will prove correct in the long run. Further observations are needed.

Tags have also been lost from some turtles tagged at other rookeries over the same period noted above and subsequently resighted/recovered, but data are still too few for more detailed analysis.

Other studies have suggested that principal causes of tag loss from live turtles are, firstly, failure to properly fix and secure the tag when being applied, then physical damage of the tag and/or point of application on the flipper at some later stage, and a growth/rejection response by the turtle. We know that the titanium tags we use are non-toxic and non-corrosible, and that the preferred tagging position being used in the best possible. At the technical level, it is most important to ensure in continuing work that tags are being properly placed and fixed in the first place, that turtles being resighted are being carefully examined and data fully recorded regarding tags carried, and that we continue to release good numbers of double-tagged turtles from our study rookeries. Where few turtles are coming ashore, as at Barrow island and Ningaloo this year, it is preferable to double-tag all new turtles as previously recommended, and to try and ensure that all remigrants also have two secure tags on when released.

Beach work at Ningaloo has not yet been in progress for long enough for remigrant green turtles to be expected.

Two recent recovery reports are noteworthy - one of the Ningaloo tagged green turtles from 1989/90 was captured and released alive inside King Sound, W.A. on November 4, 1990. This is the first distant recovery record for a turtle using a Ningaloo nesting beach, and only the second report for a southern W.A. rookery; the previous report was for a Barrow Island turtle, tagged there during the 1987/88 season and recovered off Cape Borda in the west Kimberley mid-1988.

The first report of a 1989/90 season tagged green turtle from the Lacepedes was only made in December 1990. This turtle was captured inside Napier Broome Bay by people from Kalumburu.

In total, the recovery reports for turtles that have dispersed away from the Lacepedes rookery during the past four years also present an interesting picture. All distant recoveries of 1986/87 season nesters have been made at Northern Territory locations; those from the 1987/88 group include 4 from W.A. Kimberley locations and 2 from NT locations during 1988, with all subsequent reports through 1989 and 1990 being from N.T. north coast (4) and Gulf of Carpentaria (2) locations. So far, all 8 reports of 1988/89 season turtles have been from W.A. Kimberley locations, as has the 1989/90 group recovery noted above.

Annual reporting rates for Lacepede tagged turtles relative to total numbers of tagged turtles potentially available have been reasonably consistent each year, and also for each group between years (most between 2.5 and 5.5 per thousand per annum). Obviously, a large number of tagged turtles and an effective detection and reporting system is needed to define feeding ground and rookery associations for different groups of turtles.

Other Species - General Comments

The very large changes in annual nesting abundance of the predominantly herbivorous green turtle that now appear reasonably predictable for eastern Australian rookeries in particular do not appear to occur similarly with the much scarcer and carnivorous/omnivorous loggerhead, hawksbill and flatback turtles, although inter-annual changes in nesting abundance have been found when studied.

Work on nesting hawksbill, flatback and loggerhead turtles at a number of established sites has been continued, and, with suitable opportunities arising from the reduced demands of green turtle work and recruitment of additional assistance, expanded to provide additional information where possible.

Hawksbill Turtle

Hawksbill turtles have been tagged at 4 rookeries this year: Ningaloo, Muiron Islands, Rosemary Island, and Varanus Island. Nesting of hawksbills at the Lacepedes was confirmed again this season by discovery of hatchlings emerging on the West Island beach, although adult turtles have yet to be seen on the beach.

The long-term work based at Varanus Island has been continued by Tanny Robinson. Twenty-six new turtles were tagged before Xmas, and 5 remigrants seen. One of those was the first turtle tagged with W.A. project tags in mid-February 1986 by Keith Morris - internesting interval = 5 years; the four others included 1 two-year and 3 three-year intervals. Previously, one three-year remigrant was found during the 1989/90 season. 215 hawksbills had been tagged at Varanus Island to date of summary. Presently, the Varanus Island, hawksbill rookery has the only well documented population in the eastern Indian Ocean.

Greg Oliver, CALM Reserves Officer based at Karratha was able, with the assistance of volunteers, to pay some greater attention to Rosemary Island in late-November 1990. Fifty-three hawksbills were tagged in 4 nights work, including 17 on 28 November and 23 on 29 November. These numbers of hawksbills had not previously been recorded in our project work. Rosemary Island is undoubtedly a very important hawksbill turtle rookery.

Small numbers of hawksbills have also been tagged at Ningaloo, the Muiron Islands, and previously at the Monte Bello Islands.

We have not yet received any reports of distant recoveries of any of our tagged hawksbills.

Flatback Turtle

The flatback turtle has only been recorded nesting as far south as Barrow Island so far, and we do not have any substantial reports of its occurrence in Exmouth Gulf. Apart from nesting on some of our offshore islands, it is commonly found nesting on northern mainland beaches, sometimes in reasonably large numbers, but often less.

The occurrence of an accessible rookery at Mundabullangana Station on the Pilbara coast near Cape Thouin has permitted some low key long term work to be focussed there. Started by Keith Morris in the 1986/87 season, the work has been carried over the last two seasons by Greg Oliver. This rookery is also a popular tourist attraction, and focus for some Aboriginal turtle catching and egg gathering.

An overnight visit to this rookery on 1 December 1990 resulted in tagging of 14 new turtles and the sighting of two remigrants; one at a one year interval, the other at

2 years. One other 1 year remigrant was seen here last season. 82 turtles have been tagged at this rookery so far, and some more concentrated work is planned for the New Year (1991).

Most other flatbacks have been tagged in association with green and other nesting turtles, but not all.

At Barrow Island, flatbacks have previously been tagged at an east coast exclusive use rookery, and on the west coast with green turtles. On the east coast, 20 turtles had been tagged to the end of the 1989/90 season, with one two year remigrant seen during the 1989/90 season. [Since New Year 1991 another 2 year remigrant has been seen]. This rookery does get substantial use, but most of our work effort is focussed on the west coast beaches used by greens. Only 5 flatbacks had been tagged on three west coast beaches over the same period.

Flatbacks are a reasonably common nesting species on Varanus Island, mainly in association with the hawksbills. To the end of the 1989/90 season, 34 turtles had been tagged there. Over that period, three remigrants were seen; two at one year intervals, and one at two years. Current season data are not yet available.

At the Lacepede Islands, flatbacks have been relatively scarce in comparison to green turtles prior to this season (1990/91). Only 10 turtles were tagged to the end of the 1989/90 season, and none had been seen as remigrants. During the December 1990 field trip flatbacks were seen more readily than before and another 13 were tagged. In addition, 3 remigrants were seen; one at a 3 year interval, and 2 at two years. These remigrants were exactly half of the flatbacks tagged in each of the 1987/88 and 1988/89 seasons. Contrary to prior expectations, all tags were very clean and in secure positions, more or less as originally applied. Only one tag showed any sign of tissue irritation around the point of application, and even this one had not moved towards the flipper edge. These observations, and the slightly greater abundance of flatbacks on the beach, encouraged our greater tagging effort this year.

As you can see from the above results, flatback turtles probably make more frequent returns to nest than green and hawksbill turtles.

Distant recoveries have yet to be reported.

Some further observations of the Cape Domett rookery by CALM Kimberley Region staff and volunteers before the summer wet of 1990/91 confirmed previous assessments of its importance. It is not easily accessible during the wet season.

Loggerhead Turtle

All information on the loggerhead turtle as a nesting species in W.A. prior to this season suggested it might even be less abundant than the hawksbill. Apart from one unsuccessful visit reported at Varanus Island, and a record of some very small hatchlings being found near Barrow Island some time ago, the only nesting locations appearing to be regularly used were in the Exmouth Gulf and Shark Bay areas. We still do not have any comprehensive data for Shark Bay locations. In the Exmouth Gulf area, the only regularly used nesting sites appeared to be at the Muiron Islands, with some other limited use of beaches along the Ningaloo reef.

Work this season has not substantially added to our general knowledge of distribution of nesting effort by the loggerhead turtle, but further work has amply supported previous assessments regarding the importance of the Muiron Islands. Two nights work at South Muiron Island over 14-15 December 1990 resulted in tagging of 18 new loggerheads. Limited work in previous years resulted in tagging of another 18 turtles. One of the three tagged at the end of the 1987/88 has previously been reported as a recovery - taken at Maningrida in the N.T. No remigrants have been observed from this limited program.

Loggerheads have again been tagged on Ningaloo beaches. Early data for 1990/91 are not fully available. To mid-December 1990, a total of 25 loggerheads had been tagged in this area since major beach work was commenced during the 1988/89 season.

Again, no remigrants or distant recoveries.

Leatherback Turtle

No reports of leatherback turtles nesting on W.A. beaches have been made to date. The species does frequent W.A. coastal waters, and reports are being sought for all occurrences. It is common to receive reports in the mid to late-summer period of leatherbacks being seen at sea in the Perth region. The first for this summer has been made.

Please keep an eye out for this species as well and encourage people you might know as keen recreational boaties or even operators of commercial vessels to report sightings and accidental deaths or strandings.

Someone may yet see one of these turtles on one of our beaches. Several observations of tracks fitting those expected to be made by leatherbacks are on record this year.

Close

I hope the above is of interest, and helps you to see how your contribution is part of a very comprehensive and interesting, but still incomplete whole.

Please keep up the good work. Together we will be able to achieve the desired goals of better information on our marine turtle populations, and contribute to their better conservation.

Thanks for your effort so far.

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