

# The Survival Status of Ridley Sea-turtles in American Waters

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## ABSTRACT

The Atlantic Ridley Sea-turtle (*Lepidochelys kempfi*), which only nests in the southern part of the coast of Tamaulipas, Mexico, should now be safe from extinction if existing protection schemes can be continued. The south-west Atlantic enclave of the Pacific species (*L. olivacea*) should also be safe if protection at the important Surinam nesting-beach is continued. The East Pacific populations of *L. olivacea*, though receiving partial protection in Mexico, are at present suffering a probably dangerous level of exploitation.

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## INTRODUCTION

Seven species of sea-turtles are currently recognized—the Green Turtle (*Chelonia mydas*), the Australian Flatback Turtle (*C. depressa*), the Leatherback (*Dermochelys coriacea*), the Hawksbill (*Eretmochelys imbricata*), the Loggerhead (*Caretta caretta*), and the two species of Ridleys (*Lepidochelys kempfi* and *L. olivacea*). Some of these species (e.g. *Chelonia mydas*) are vegetarian when mature, and have complex cycles of long-distance migration between their feeding and their nesting grounds. Others (e.g. *Chelonia mydas imbricata*) are predominantly carnivorous, and their life-cycle probably does not involve extensive migration.

The actual nesting process is surprisingly uniform even between the most divergent species: the female turtle emerges from the sea and crawls to a point above the high-tide mark. Then, having reached a suitable nesting-site, she usually makes some attempt to dig a body-pit by means of movements of all four limbs; however, the time spent on this phase is extremely variable from one species to another. The actual cavity in which the eggs are laid is excavated with the hind flippers alone, and the result is a very beautiful flask-shaped construction, the maximum depth of which represents the fullest possible distance that the turtle's hind flippers can stretch. The eggs are laid in groups of two or three, and may total from 70 to about 200, depending upon the species (and indeed

the individual population of the species). When the eggs have all been laid, much time is spent filling in the cavity and camouflaging the nest-site in an attempt to foil egg-seeking predators before the turtle returns to the sea.

Nesting turtles of some species (e.g. *Eretmochelys imbricata*) emerge singly on almost any stretch of suitable beach in the tropics. *Chelonia mydas*, on the other hand, is colonial in its nesting habits, while the two species of *Lepidochelys* in some areas carry colonial nesting to the extreme, as is discussed below. All species nest at least twice in a season (i.e. year), while Green Turtles can nest up to seven times in a single season (at intervals of about two weeks). Successive nesting seasons are separated by at least one non-nesting year except in the case of the two species of Ridleys.

Both of the species of *Lepidochelys* occur on the shores and in the waters of the Americas; the Atlantic Ridley (*L. kempfi*) is found throughout the Gulf of Mexico and also along the Atlantic seaboard of the United States, while the so-called Pacific Ridley (*L. olivacea*) is found not only along the Pacific Coast of Mexico and Central America, but also along the Atlantic Coast of South America—particularly in the Guianas. Outside the Americas, *L. kempfi* is only represented by occasional current-borne yearlings stranded on the coasts of northern Europe and presumably lost for ever from the breeding population. *L. olivacea*, on the other hand, has an astonishingly wide distribution throughout the tropical oceans of the world, though nowhere else does it seem to reach the concentrations that occur in some parts of the Pacific coast of Mexico.

The Ridleys are the smallest of the sea-turtles; both species can be mature at a carapace length of only 23 in (58.4 cm), while the largest individuals rarely exceed 28 in (71.1 cm) or a weight of 100 lb (45.4 kg). Both are carnivorous, *L. kempfi* eating crabs of many species and *L. olivacea* subsisting mainly on shrimps. They are unique among sea-turtles in having an annual breeding cycle (other species nest every

second or third year), but it is rare for Ridleys to nest more than twice in a season.

#### SURVIVAL STATUS OF *Lepidochelys kempii*

The Atlantic Ridley is considered a threatened species because of its extremely localized nesting habits, which make it highly vulnerable to human predation. It appears that virtually the entire world population nests simultaneously in broad daylight on a few hundred yards of beach between Rancho Nuevo and Boca San Vicente in the State of Tamaulipas, Mexico. The nesting aggregation of 18 June 1947 was estimated to number 40,000 individuals (Carr, 1963). However, for a period in the 1950s the lagoons behind the beach dried up, and the fishermen, deprived of their rich fishing grounds, turned to turtle hunting instead. Extensive predation on the eggs had been practised for many years, but this was the first time that large numbers of the adult turtles had been slaughtered. The population was apparently seriously diminished, and for several years no nesting aggregations were reported. However, in 1966 (the year in which the Mexicans inaugurated a programme of military protection for the last remaining turtles nesting on the beach) an *arribada* (nesting aggregation) of about 1,500 individuals was seen in the former situation (Chávez *et al.*, 1967). The following year there was one of about 3,000 in the same locality, while an estimated 5,000 turtles were found to be nesting there on 23 May 1968.

In 1968 I visited the conservation camp at Rancho Nuevo, and although only a few isolated turtles nested during the 2½ weeks I was on the beach (Fig. 1), I

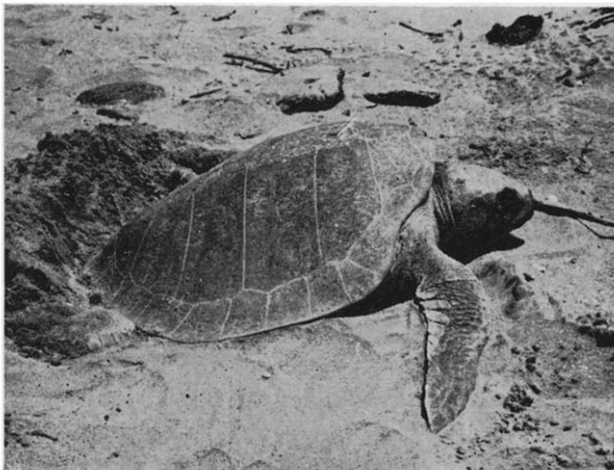


Fig. 1. An Atlantic Ridley (*Lepidochelys kempii*) nests by daylight on the beach at Rancho Nuevo, Tamaulipas, Mexico. Photo: Antonio Montoya.

could see that very few eggs and adult turtles, if any, were being lost to humans. Coyotes, however, were serious predators on the new-laid eggs, and a new nest had to be transplanted to the hatchery within a few hours in order to prevent its almost certain destruction by coyotes that night. The *arribada* came five days after I left the beach, and Sr Antonio Montoya, of the Instituto Nacional de Investigaciones Biológico-Pesqueras, kindly sent me photos of the heartening sight of thousands of Ridleys on the beach.

The world population of the Atlantic Ridley, then, may be estimated at 6,000–10,000 mature females. This figure is low when we realize that some 3,000 mature individuals of the Pacific species were caught every day for three months in 1967 at the port of Mazatlan alone. Nevertheless the species is probably now gradually increasing in numbers, and with continued protection of the nesting beach the primordial population level may eventually be re-established.

#### SURVIVAL STATUS OF *Lepidochelys olivacea* IN THE WEST ATLANTIC

The 'Pacific' Ridley, *L. olivacea* (Fig. 2), is distinguished from *L. kempii* by its higher shell, the greater number of lateral plates in the carapace, and some

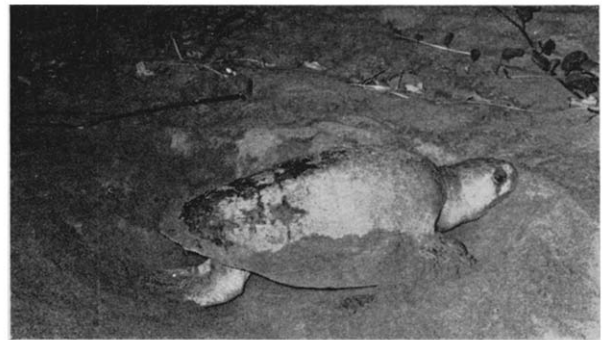


Fig. 2. A 'Pacific' Ridley (*Lepidochelys olivacea*) covering its nest at Eilanti Beach, Surinam. Photo: Peter C. H. Pritchard.

quantitative characters in the structure of the skull and jaws. It may be the most numerous sea-turtle species in the world, but the tremendous exploitation that is being practised in Mexico on the turtles themselves, and in Central America on the eggs, leaves little room for complacency. The species throughout most of its range is a diffuse, one-by-one nester, but large aggregations have now been seen nesting in five places—Eilanti Beach, Surinam; la Piedra de Tlacoyunque, near San Luis de la Loma, Guerrero, Mexico; just south of Bahia Banderas, Jalisco, Mexico; on a stretch of beach between the States of

TABLE I  
Numbers of Turtles Nesting Each Night During the 1967 Season  
at Eilanti Beach, Surinam

25 April	0	15 May	3	4 June	3	24 June	63	14 July	8
26	1	16	1	5	4	25	37	15	10
27	0	17	0	6	11	26	208	16	9
28	1	18	1	7	1	27	61	17	5
29	0	19	7	8	8	28	27	18	0
30	11	20	4	9	9	29	142	19	5
1 May	1	21	1	10	13	30	54	20	10
2	0	22	6	11	152	1 July	35	21	4
3	0	23	0	12	38	2	3	22	6
4	2	24	0	13	260	3	14	23	11
5	0	25	0	14	82	4	11	24	22
6	1	26	3	15	122	5	2	25	5
7	0	27	5	16	6	6	7	26	6
8	0	28	22	17	8	7	5	27	0
9	0	29	23	18	16	8	16	28	29
10	0	30	53	19	7	9	47	29	13
11	0	31	33	20	17	10	98	30	0
12	5	1 June	27	21	5	11	412	31	0
13	4	2	11	22	4	12	96	1 Aug.	0
14	1	3	12	23	22	13	4	2	0

Colima and Michoacan, Mexico; and between Puerto Escondido and Puerto Angel, Mexico.

In the western Atlantic, *L. olivacea* has now been recorded from Natal, Brazil, to Cumaná, Venezuela (Pritchard, 1969), representing a linear range of about 2,500 miles (4,023 km). However, nesting has so far been definitely reported only in Guyana and Surinam. Diffuse nesting occurs at Shell Beach, Guyana, and probably several other beaches in the country, while in Surinam small or moderate numbers nest at Bigi Santi and Baboen Santi. It is probable, however, that the vast majority of 'Pacific' Ridentles on the South American Atlantic coast converge to nest on a half-mile of beach called Eilanti, near the mouth of the wide Marowijne River which separates Surinam and French Guiana.

I first visited Eilanti in June 1966. My three-day stay happened to coincide with the first *arribada*, or concentrated nesting aggregation, of the season, and over 400 turtles nested during the first night (see Pritchard, 1967). My studies over the next two years revealed that these intensive nesting phases each last for a few nights, and recur three or four times during the season at two-week intervals, with usually less than 20 turtles nesting each night in between. Table I shows the numbers of turtles nesting at Eilanti during each night in the 1967 season. Many individual tagged turtles were seen nesting during two of the phases, but almost none in all three or four (Pritchard, 1969). Over three years I tagged about 1,000 turtles, and the ratio of tagged to untagged turtles at the end

of the third season suggested that about two-thirds of the adult females in the population were now tagged.

Sea-turtles are not killed anywhere in Surinam, and egg-collecting is prohibited in most of the country. However, the Galibi Carib Indians on the Marowijne River have been collecting 'Pacific' Ridley eggs at Eilanti, quite legally, for many years. Because of the small size of the beach it is not difficult for a few men to get every egg that is laid. It thus seemed that the days of the population were numbered. However, in 1967 I received a grant from the World Wildlife Fund which enabled me to buy the entire season's production of eggs at Eilanti (see Pritchard, 1968). We arranged for the Indians to bring the night's eggs to our camp



Fig 3. Part of the 'Pacific' Ridley hatchery at Eilanti Beach, Surinam, in 1967. Photo: Peter C. H. Pritchard.

each morning, where we buried them in an artificial hatchery (Fig. 3). In this way, and with the splendid cooperation of both the Indians themselves and the Surinam Forest Service, about 300,000 eggs were purchased, and large numbers of young were successfully hatched and conducted safely to the sea (Fig. 4).

In 1968 we refined our method in the hope of getting a higher hatching percentage; the eggs were not moved but the nests were simply marked with sticks stuck in the sand. Each Indian was paid 1 guilder 15 cents for each nest he found (the previous year we paid 1 cent per egg, and established the average of 115 eggs per nest). It was of course not possible to count the hatchlings from the 1968 season, as the hatchling turtles usually emerged at night and made straight for the sea, but the total should have been around 250,000. Similar programmes are envisaged for further seasons, and so the future of this small enclave of the 'Pacific' Ridley should now be safe.

#### SURVIVAL STATUS OF *L. olivacea* IN THE EAST PACIFIC

The Pacific coast of Mexico and Central America supports a large population of Pacific Ridelys—an estimated 30,000 were seen in a single nesting aggregation at San Luis de la Loma, 90 miles (145 km) along the coast from Acapulco, on 18 August 1967, while several such groups were seen in 1968 (see Table II).

However, the extreme—almost 100 per cent—egg exploitation practised throughout the Central American part of the range is not compatible with maintenance of present population levels in that area. In the autumn of 1967 I spent two months on the Pacific beaches of Honduras. Every night there were far more egg collectors than turtles on the beach, and clearly not a single nest escaped, at least in the areas where I was working. In fact as soon as a turtle appeared at the edge of the sea, several villagers would run down and try to get to it first, the winner picking the turtle up bodily and dumping it in a prepared pit in the ground. Quite often, after recovering from the shock of being transported in this manner, the turtle would remember only that it had come ashore to nest, and would start excavating. If it started to move away, the process was repeated.

In Mexico an attempt is being made to harvest the species as a renewable resource; legal protection is afforded nesting turtles and their eggs throughout the country, and the localities where aggregated nesting occurs are patrolled for at least part of the critical time. In fact about 1,700,000 baby 'Pacific' Ridelys were artificially hatched and released at San Luis de la Loma in 1967. Nevertheless the number of adults caught is staggering—in 1967, the record year, 11,392 short tons (10,335 metric tonnes) of these turtles were caught in Mexican waters. The financial incentive to catch turtles in this area is high—there are markets for the meat (which is canned), for the skin (which is used for luxury shoes and handbags), and even for the skeleton and shell, which are rendered into fertilizer. It is possible that the beach protection schemes can offset



Fig. 4. Hatchling 'Pacific' Ridelys released on the beach at Eilanti head unerringly towards the sea. Photo: J. P. Schulz.

TABLE II

Estimated Numbers of Nesting Turtles in Nine Arribadas of *Lepidochelys olivacea* on the Pacific Coast of Mexico in 1968 (A. Montoya, personal communication)

Locality	Date	Estimated number of turtles
Playa la Escobilla, Oaxaca	7-10 August	80,000
	28 August	20,000
	19 September	30,000
	6-7 October	15,000
Playón de Mismaloya, Jalisco	20-21 November	8,000
	9-11 July	20,000
Piedra de Tlacoyunque, Guerrero	26 August	10,000
	2-4 September	40,000
	30 September	5,000

such huge losses; but there is no definite basis for any such assumption, and it seems a dangerous gamble to allow such enormous predation on the adult turtles so soon after the instigation of partial protection for the nesting beaches.

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#### White Rhinos Brought to Kruger National Park, South Africa

The relocation of wild animals, particularly the rare species, so as to ensure their survival in the long run, is one of the most important tasks of the South African Wildlife Foundation (World Wildlife Fund National Appeal in Southern Africa).

In May 1969 the Foundation made funds available for the translocation of 38 White Rhinos from Natal to the Kruger National Park. These animals have now been released in their new environment and are doing very well.

This translocation programme has favoured both Natal and Transvaal: Natal, inasmuch that it has been relieved of surplus White Rhinos, and Transvaal in the strengthening of the herd already established.

Last year the SA Wildlife Foundation assisted in transferring to the National Parks Board of South Africa an earmarked donation from Mr Charles Engelhard for the construction of the Letaba Dam in the Kruger National Park. Building operations have already commenced and on completion the Dam will have a capacity of 700 million gallons (3,182 million litres) of water.

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Fig. 1. Two White Rhinos being released in the Kruger National Park, South Africa.