

LEACH'S STORM PETRELS

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It is a brisk July night on a spruce-clad island in the Bay of Fundy, New Brunswick. The sky above is like a thick star soup. The waves roar with the rising tide as they crash in among the clattering rocks on the eastern shore. Gulls, never silent, scream eerily from the shores and fields. The pointed spires of the spruce woods are silhouetted against the spangled sky. There is no moon and it is dark, really dark. And as we walk into the shade of the spruce woods it is so dark that we cannot even see the path ahead of us. Our feet travel the familiar path to the petrel colony with our eyes set straight towards the gray clearing up ahead. Roots and rocks, unnoticed during the day jut up unexpectedly and cause us to stumble now and then.

But we are not alone. Here in the spruce woods the air is filled with dancing petrels, chattering and chuckling as they flutter softly through the woods and over the clearings. They are displaying to each other with characteristic calls and flight patterns. Here on Kent Island in late May and early June, these dancing birds would have been preparing for breeding, the group flights serving to stimulate the birds into physical and psychological breeding condition. In July, the chattering, flying birds are mostly prebreeders. They will not be nesting in earnest until next year. However, at this time, the breeders are already involved in breeding and are not interested in such affairs. Now their nocturnal flights from the feeding grounds on the ocean to their burrows are direct.

The ability of Leach's Storm-Petrels (Oceanodroma leucorhoa) to find their burrows among the hundreds or thousands of others in the colony is amazing. Once they get into the dark spruce woods, they apparently find their burrows by smell. This an unusual ability for birds, which generally have a practically non-existent sense of smell. The homing abilities of petrels are truly remarkable. They can find their way from miles out at sea to their own nesting burrow even when the fog is so thick you could almost slice it! How do they do it? That's a good question- the stars and the outline of the island are obscured and the distance is too great for their sense of smell to be useful. Apparently Leach's Storm-Petrels have different means of navigation for different situations.

Research with petrels conducted on Kent Island by Dr. Charles E. Huntington of Bowdoin College has shown that a breeding petrel released from Scotland can return to its burrow in New Brunswick within 9 days! And on returning, it may weigh the same as it did when it left.

DELAYED MATURITY AND THE NONBREEDERS:

Another big question being studied by Dr. Huntington and his students is that of delayed maturity. Research has shown that Leach's Storm-Petrels do not normally breed until they are 4 or 5 years old. Why do they wait so long? Surely they are big enough after one year. Wouldn't it be more adaptive to breed as soon as possible in order to have more offspring?

To study this question, Dr. Huntington and his students have mist-netted and banded thousands of these non-breeding petrels as they court each other on midsummer nights. Dr. Huntington believes that these non-breeders spend their early years far out at sea. After 3, or more commonly, 4 years, they probably spend a summer moving around from one nesting island to another prospecting for a colony that suits their tastes. On these islands they engage in frivolous

courtship displays and even do some burrow construction but never lay eggs. Why? Do they need the practice? Do the courtship and burrow construction activities help them determine the nature of the nesting colony? Perhaps petrels need several years of experience to learn navigation and orientation well enough to breed successfully. Kent Island workers have also banded thousands of petrel chicks in hopes of getting reports of their movements to other islands. Since there are very few petrel banders elsewhere, very few have been recovered. But what few exist do support Dr. Huntington's hypothesis.

For example, one petrel mistnetted at Kent Island was banded as a chick 4 years earlier 700 miles away on Gull Island, Newfoundland. Another bird which was netted at Kent Island in 1973 was breeding on Matinicus Rock, Maine in 1975.

THE PETREL COLONY DURING THE DAY:

When we return to the petrel colony the next morning, shafts of sunlight pierce through the spruce canopy which is draped with long strands of Old Man's Beard Lichen. The air is fragrant with ferns, firs, spruces, and good, rich soil. Winter Wrens (Troglodytes troglodytes) bubble their songs exuberantly from the brush tangles as if they will never run out of breath.

The floor of the forest is soft and springy beneath our feet. Sun splashes on patches of brilliant white bunchberry flowers and clumps of translucent green wood fern. The ground is decorated with mossy stumps and logs gradually being decomposed and converted to soil. At the base of many of these stumps and under logs and tree trunks are the fist-sized entrances to the burrows of Leach's Storm-Petrels.

GRUBBING:

A hand, the hand of a petrel grubber, is reaching quickly but carefully down a cool dark burrow. It squeezes under roots and over the floor which has been packed down by much nocturnal traffic. The hand continues until, when almost shoulder deep, its fingers feel the edge of a nest. The cold fingertips touch across moss, lichen, spruce twigs, and spruce cones and then they are met by a round fragile object-- an egg, only one. And it's warm. There must be a bird present, too. This white egg, speckled very faintly with reddish dots around the wide end, is carefully taken out of the nest and placed at the side of the nest chamber to avoid damage when removing the parent. The fingers reach and touch feathers--or are they leaves from the nest? No, they're feathers. They feel their way up the long primaries to get into a more proper holding position and are soon met by a painless bite from the occupant's beak. The fingers clamp down on the beak and the bird is gently drawn headfirst out of the burrow into the waiting hands of the grubber.

IDENTIFICATION AND NESTING:

Immediately, the slaty gray body, white rump, and tubular nostrils on the beak tell us that the bird is a storm-petrel. Her pleasing, musky smell is earthy, reminding us of the soil she just came out of. We can identify her as Leach's Storm-Petrel by her forked tail and the black webbed feet.

She has been a breeder in the area for quite a few years, but her mate, Long John Silver, has been here longer. He is the oldest Leach's Storm-Petrel known. The grubber, Dr. Huntington, has known him and kept track of him for 22 years-- even longer than he has known his own wife! Since petrels don't breed until they are 4 or 5, Old Long John was at least 26 years old in 1975. This is an old age for a bird, especially for one about the size of a Robin.

As a side note to Long John Silver's history, we can see that he has remained faithful to his nesting burrow and mate. In 1953 his burrow was not identified by number but it was probably the same nest in which he bred every year since 1956 except 1959. In 1959 a "window" was installed in his burrow in the hope of observing the occupants by infrared light. Although it kept the birds from nesting there, Long John was caught flying nearby. His mate who was with him from 1956, and probably earlier, was not seen after 1958. In 1960 he had a liason with a fickle petrel who turned up in 1967 and 1969 in another burrow. After a 2 year "marriage" to a third wife, he acquired his present faithful mate in 1963. It is unclear whether this bird's fidelity to his mate was based on individual recognition or faithfulness to his burrow.

Long John's mate had been sitting on her egg for 2-6 days without leaving once for a bite to eat. Meanwhile, Long John was far out at sea either alone or with a few other petrels, stuffing himself in preparation for his long fast. This cycle goes on for about 6 weeks while the egg hatches. Then the parents will leave the chick in the burrow and feed it each night with reddish, oily, masses of regurgitated fishes and planktonic crustaceans which the petrels pick up from the ocean swells.

While in flight, Leach's Storm-Petrels appear longer and slimmer than Wilson's Storm-Petrels (*Oceanites oceanicus*) due to their longer tails and wings. Their flight is also distinctive-- very similar to that of a nighthawk. It is buoyant and irregular with very deep wingbeats. They rarely patter along the surface of the water while they feed as Wilson's Storm-Petrels do, but rather, they alight momentarily to pick individual crustaceans from the water surface. This type of feeding behavior severely limits the amount of food a petrel can get. Each morsel of food requires a separate action to capture it and only the food within 1 or 2 cm of the surface is available to the birds. Because of this limitation in feeding efficiency, the petrels can raise only one young each summer. Experiments have shown that they simply cannot raise two. Might this problem be related to their delayed maturity? Does all the prebreeding courtship activity, exploration, feeding, and navigating experience allow the petrels as individuals and as pairs to forage efficiently enough to feed their young?

A lot of work goes into the care of this one young. It takes 8-10 more weeks of care to raise it even after the 6 weeks of incubation. This is amazing because while the Robin, a bird about the same size, can rear a brood of 3-5 young 2 or 3 times each summer, the Leach's Storm-Petrel takes 15 weeks to raise one young! During this time, the chick changes from a soft, cuddly gray ball of peeping fluff with tiny white legs and beady black eyes to a full-grown, fat and flabby, fully-winged fledgling sometimes weighing almost as much as both parents put together. Until this time it has never left its burrow. But after the chick has lost weight for several consecutive days, the parents desert it. In the next few nights it leaves the burrow temporarily to exercise its wings. Within a week it leaves the burrow for good, driven by hunger.

MIGRATION:

By September, migration has begun. Leach's Storm-Petrels migrate through Massachusetts from early September to mid-November and can be seen especially after storms. First Encounter Beach in Eastham is a good place to look for them after a NW wind following a Nor'easter. Leach's Storm-Petrels do not normally follow boats but can occasionally be baited to them by throwing bits of fish liver overboard. There are a few records of Leach's Storm-Petrels in December, probably from late emergences of young in the breeding colonies. Spring migration in the Atlantic is mainly in April and early May, but they may continue to come ashore until much later.

DISTRIBUTION:

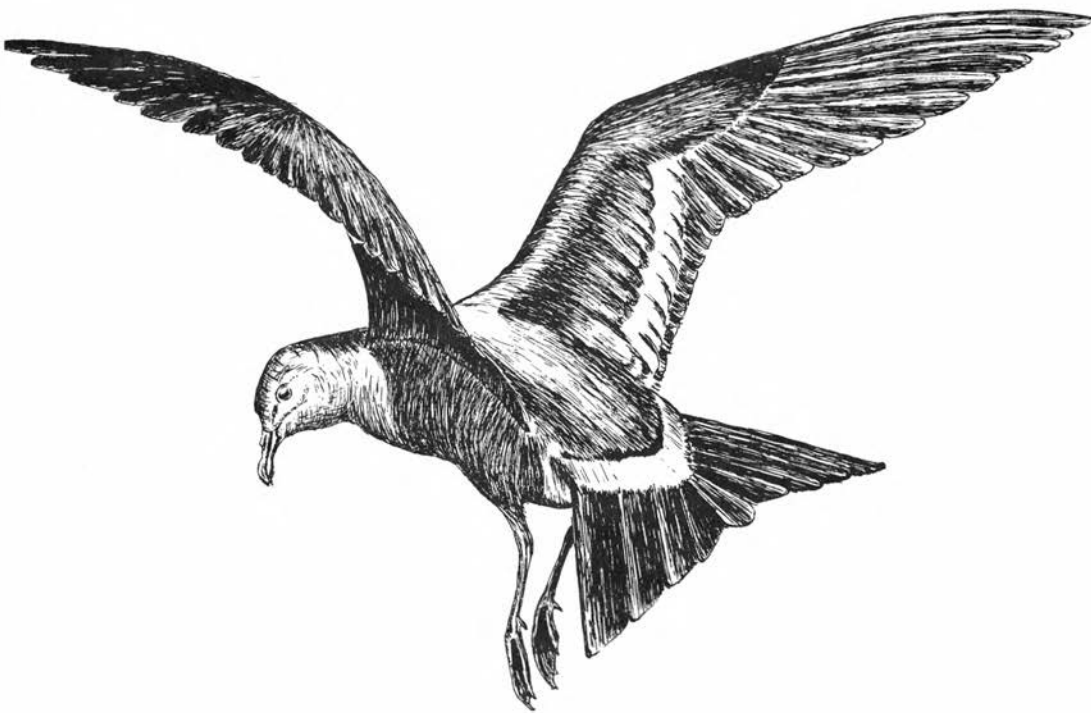
The Leach's Storm-Petrel is the only breeding storm-petrel of the American North Atlantic. It breeds on bare and spruce-clad islands of both the eastern and western Atlantic. It is also a common breeder in the North Pacific where it breeds as far south as Baja California and Southern

Japan. In the northwestern Atlantic, the petrel capital is Newfoundland, where hundreds of thousands of petrels have been known to breed on a single small island, riddling the ground with their burrows.

In winter, Leach's Storm-Petrels range far and wide in the Atlantic and Pacific Oceans, not gathering in flocks, but going where they can find food. Being small, solitary, and inconspicuous birds, they are rarely reported by mariners and their winter range is uncertain.

The southern most nesting colony in the northwestern Atlantic is Penikese Island off the coast of Massachusetts, where a few pairs still breed. Many of the former nesting colonies, however, have been wiped out from predation by cats, dogs, rats, and other land mammals introduced to various islands by man.

EVERYTHING about petrels is fascinating: their longevity, their long incubation period, their fasting ability, their delayed maturity, their extraordinary powers of navigation, and even their peculiar odor! Visit any active petrel colony at night and without a doubt you will come away captivated by the mystery of the storm-petrel.



Drawing by Diane Rockcastle, Cornell University