



Envirotalk



GOVERNMENT OF BERMUDA

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PROMOTING APPRECIATION, ENHANCEMENT AND CONSERVATION OF BERMUDA'S ENVIRONMENT

WELCOME

to our final edition of 2011! Wishing you a Merry Christmas and a Happy New Year!

In this winter issue –

- 250 years of veterinary medicine is celebrated by veterinarians all over the world.
- Terrestrial Conservation Officer, **Jeremy Maderios**, talks about the breeding success and the status of the Bermuda longtail.
- **Dr. Geoff Smith**, Environmental Officer, tells us about how Bermuda prepared for the 2010 Gulf Oil spill.
- The Department of Conservation's Agriculture Officer, **Tommy Sinclair**, informs readers of the 'buzz in the air'.
- Bermuda's entry in the RHS Chelsea Flower Show is detailed by Park Planner, **Jameka Smith**.
- As usual please check our winter planting calendar for the wonderful winter collection of vegetables and flowers.

Please contact:

Caroldey Douglas (Tel: 239-2307 or e-mail: cdouglas@gov.bm) with ideas for future articles.

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2011: WORLD VETERINARY YEAR

During the year 2011, the veterinary profession has been celebrating the 250th anniversary of formal veterinary education and, by extension, the profession itself. Symposia and workshops around the world have been marking this milestone through regional and national veterinary schools, institutions and organizations, and corporate and NGO partner organizations.

Animal diseases and treatment thereof have played vital roles throughout history. The American Veterinary Medical Association reports that the earliest known documentation of the treatment of animal disease dates back to 1900 BC. The word 'veterinarian' came into use in the mid-1600s, and veterinarians were then trained by shadowing others and learning by trial and error. However, in 1761, Claude Bourgelat founded the world's first veterinary school in Lyon, France, and three years later, founded the Alfort veterinary school near Paris. By setting up the world's first veterinary training institutions, Bourgelat is credited with having created the veterinary profession itself.

Bourgelat's collaboration with surgeons in Lyon led him to be the first scientist to suggest that the study of animal biology and pathology would help to improve our understanding of human biology and pathology. The concept of comparative pathobiology has helped carry modern medicine towards the success it now enjoys. It's most fitting that modern veterinary medical and other health professionals are embracing the philosophy of 'One Health'. 'One Health' speaks to the recognition that animal health, human health and environmental health are intimately linked, and promotes global collaboration between human medicine and veterinary medicine while engaging the principles of public health and ecosystem health.

Pet owners may be aware of the medical marvels now bestowed upon our non-human companions. Less apparent but equally important, the veterinary profession, through the World Organization for Animal Health (OIE), has turned its attention to establishing welfare standards for animals in industrial production and commercial transport, animals destined for slaughter for human consumption, euthanasia for purposes of disease control, control of stray dog populations, and use of animals in research and education... all hot topics in a contemporary world.

Let's not forget that while veterinarians are animal doctors, people are our first 'patients'. Veterinarians play key roles in public health. The primary role and responsibility of veterinary medicine is to protect human health, and this is done in a variety of ways:

- Veterinarians protect our food supply through a variety of techniques to ensure a wholesome food product on your table;
- Veterinarians enhance food security by being a part of research that develops new food sources and increases efficiencies for existing farming practices to feed a growing human population; we bring better agricultural practices to undeveloped parts of the world;
- Veterinarians investigate and control emerging diseases and disease outbreaks;
- Veterinarians engage in crisis management and disaster preparedness;
- Veterinarians ensure the health and welfare of our companion animals with which we share of lives and homes;
- Veterinarians prevent and control zoonoses, which are diseases that can be spread between humans and animals.

These activities directly impact human health. Veterinarians play a less obvious role in human health through the promotion of the human-animal bond, biomedical research, regulatory medicine and protection of the environment and biodiversity. In a world where global health threats are often of animal origin, and a world that is interconnected by rapid global travel and trade, these distant veterinary activities affect us at home.

Thus in 2011, the world not only celebrated the 250th anniversary of the 'birth' of formalized veterinary medical education, but also honoured and celebrated the veterinary medical profession — a profession dedicated to protecting and preserving the health of animals, humans and the ecosystem.

Whether you're a pet owner, farmer, vegetarian or neither of these, there are vets in your daily life! Have you hugged your vet today?

*Jonathan Nisbett
Government Veterinary Officer
Department of Environmental Protection*

STUDIES OF THE BREEDING SUCCESS AND STATUS OF BERMUDA'S LONGTAIL POPULATION IN 2011 (WHITE-TAILED TROPICBIRD *PHAETHON LEPTURUS CATSBYII*)

The Bermuda longtail, or white-tailed tropicbird as it is correctly known, is one of Bermuda's best-known and most loved bird species. Long considered to be the harbinger of spring, the first sighting of a longtail is an event that is always recorded in the local newspapers. The North Atlantic contains a distinct sub-species, nesting in Bermuda and the Caribbean.



Check of downy Tropicbird chick – by C. Burville

Bermuda's population is very important, with half the breeding population of this subspecies. Bermuda's tropicbirds are therefore of international significance.

Because of the importance of Bermuda's nesting population, a long-term study is being undertaken to gain information on current breeding success and threats to the species,

and determine ways of protecting and assisting the tropicbird on Bermuda.

Every year, over 200 tropicbird nests are monitored at 10 survey locations in the eastern half of Bermuda. Eight of these locations are on the Castle Harbour islands, which are nature reserves managed to eradicate rats and other predators, and where human disturbance is strictly controlled. The other two locations are at Shelly Bay, Hamilton parish, and at Bailey's Bay. For this study, accessible tropicbird nests are marked with tags and checked weekly between May and October. The numbers of nests where eggs are laid and chicks successfully fledged are recorded, and chicks are fitted with identification bands

Threats to the longtail on Bermuda include the destruction of coastal nests by hurricane erosion. A joint project between the Department of Conservation Services (DCS) and the Bermuda Audubon Society (BAS) has installed artificial nests where natural nests were lost to hurricanes. Additional threats include rats and crows, which can eat eggs and young chicks in the nests, and feral domestic pigeons, which occupy tropicbird nests and foul them with droppings and parasitic mites.



Nearly full fledged Tropicbird chick – J. Maderios

This study has confirmed that numbers of active, accessible longtail nests at the study locations increased from 159 in 2009, to 174 in 2010, and to 214 in the 2011 nesting season (See Table 1). The number of confirmed successfully fledged chicks likewise rose from 101 in 2009, to 132 in 2010, and to

a total of 153 chicks in 2011. This represents breeding success rates of 63.5% for 2009, 75.9% for 2010, and 71.5% for the 2011 nesting seasons, unusually high figures for any seabird species.

One objective of this study was to compare breeding success of longtails in artificial nests to birds nesting in natural rock cavities. By 2011, a total of 96 artificial nests had been installed at survey locations, with 69 having nesting activity during 2011. Breeding success at artificial nests reached 79.7%, compared to 69.2% for natural nests. These results illustrate that the programme of artificial nest installation is successful in increasing numbers of breeding pairs and should be continued.

Table 1: Tropicbird Nesting Statistics – 2000-2011 Nesting Season

Year	Total No. of surveyed nest sites	Total No. of nests with nesting activity	Total No. of fledged chicks	Breeding success percentage	No. of newly prospected nest sites
2009	177	159	101	63.5%	26
2010	247	174	132	75.9%	30
2011	255	214	153	71.5%	23

These results indicate that the longtail has high breeding success on

Bermuda, at both managed and unmanaged locations. Surveys over the last six years indicate a total estimated local population of 2,500 to 3,000 nesting pairs. Although it is subject to a number of threats, artificial nests when correctly installed have proven effective in counteracting losses of nests. With continued protection and management, the future looks good for Bermuda's beautiful symbol of spring.

Jeremy Madeiros

Government Conservation Officer (Terrestrial)

Department of Conservation Services

GULF OF MEXICO OIL SPILL 2010 – BERMUDA'S PREPAREDNESS

It has been over 18 months since the BP deepwater horizon drilling operation started to spill over four million barrels of oil into the Gulf of Mexico over a three-month period. The deepwater plume that formed was unprecedented in terms of its size, depth and duration in addition to the impact caused by some 18,379 barrels of dispersants added to the oil plume. Longer term monitoring is required to fully understand where all of the dispersed oil was deposited and to ascertain the full impact to the marine ecosystem.

The Louisiana light crude oil that made landfall within the Gulf of Mexico became weathered relatively quickly due to evaporation and microbial degradation, both of which proceed at relatively accelerated rates in this part of the world. As the degradation proceeded over weeks to months the surface oil that remained at sea ultimately amassed into tar balls which floated on the sea surface until they ultimately make landfall. The nature, impact and location of the sub-surface, deep oil plume has still yet to be fully quantified.

To prepare Bermuda for an appropriate response to the BP oil spill the Department of Environmental Protection referred to its detailed Marine Pollution Contingency Plan which defines the roles and requirements of the various Government and non-Government stakeholders. The Department coordinated a workshop for a working committee of the key stakeholders to estimate the potential route of the oil spill, its timeline, nature and potential impact to Bermuda before mitigation and remediation actions could be put in place.

Working with data from the various NOAA (National Oceanographic Atmospheric Administration, US) monitoring sites the second meeting of this Bermuda oil spill working group was planned for when the oil product was detected leaving the Gulf of Mexico and entering the Atlantic Ocean

and Gulf Stream. Luckily for the eastern coast of Florida (and Bermuda) this second meeting was never called as the large circulating eddy that had spun off from the loop current in the Gulf of Mexico effectively prevented the oil from riding the loop current towards the Florida Keys and out of the Gulf of Mexico.

If the oil spill had moved into the Atlantic Ocean and the Gulf Stream as an 'oil in water' emulsion (i.e. not as tar balls) then the Department had already gained approval from Container Ship Management company in Bermuda and the Dutch owners of the Somers Isle ship to install surface water monitoring equipment to detect oil biweekly between Bermuda and Jacksonville, Florida. This initiative would have been based on results from the NOAA monitoring studies that were proceeding at this time in order to determine the effectiveness of such an early warning detection system.

Working committee members Drs. Rod Johnson and Tony Knap from BIOS estimated that the level of dilution of the oil spill once within the Atlantic, coupled with the potential tortuous route and extended timeline to Bermuda would be expected to primarily yield tar balls. However, the unprecedented deep, dispersed nature of a proportion of the spill required this more typical and expected hypothesis to be continually substantiated using data from NOAA.

Referring to drifter buoy experiments in the Atlantic Ocean and the properties of the many cyclonic and anticyclonic gyres in the Sargasso Sea it was apparent that the timeline of the oil product to reach Bermuda would have been typically of the order of six months to well over a year. Such duration would have expected to yield tar ball type products to our beaches. I am told it used to be common practice to take Lysol to the beach in Bermuda up to the early 1980s in order to remove tar stains from feet. Tar balls would have diminished around the world from the mid 1980s as ship bilge washing practices became illegal through the marine pollution regulations of the International Maritime Organization (MARPOL Annex I).

Geoff Smith
Environmental Engineer
Department of Environmental Protection

A BUZZ IN THE AIR

Recently there has been a noticeable buzz in the air. This buzz has been music to the ears of many home growers, garden enthusiasts, farmers and beekeepers. What a difference to the deafening silence of our bees just one year ago!

As you may know, the varroa mite (*Varroa destructor*), which is perhaps the most destructive of all honey bee pests, was discovered in Bermuda in November 2009 (see *Envirotalk Bulletin* Vol. 78 No. 1 – Spring 2010). How it made its way to Bermuda remains a mystery. The varroa mite attacks by attaching itself to the bee and feeding on hemolymph (bee blood). This results in the weakening of the bees and possibly the death of the colony. The transmission of destructive viruses throughout the entire colony is also possible as a result of the varroa's feeding habit. Varroa has led to the loss of millions of bee hives around the world. Last year at this time it was estimated that Bermuda had lost approximately 60% of its honeybee population.

Farmers reported crop losses. Home growers, as well as the general public, reported a dramatic decrease or absence of bees in their gardens. Beekeepers reported a very poor honey harvest. This was devastating news and the prognosis seemed grim. Many, including me, thought the worst was yet to come and that more bee losses could be expected.

I am happy to say, this didn't happen, at least not yet. The bees held their own over last winter and in the spring of this year many swarms were reported and caught. Beekeepers were able to build up the number of hives through the catching of swarms and making 'splits' (making two or three hives by splitting or dividing one strong healthy hive.) One positive outcome of the bee crisis was that it sparked a renewed interest in beekeeping and a number of new beekeepers have emerged.

The beekeeping fraternity saw their bees struggle through this year's drought-like conditions which resulted in a poor summer honey harvest as many nectar producing trees failed to bloom. Still, the beekeepers remained hopeful that conditions would improve. The mid and late summer rains came at an opportune time as many of the nectar producing trees bloomed profusely and resulted in a strong nectar flow. Early reports indicate that the bees have been very active and this should result in a great honey harvest. At the time of writing, some beekeepers have already harvested honey and those eagerly awaiting Bermuda honey should start seeing it in the stores and markets very soon. From now to the end of the year beekeepers will be harvesting honey and smiling once again especially after last year's disappointing experience.

Exactly why we experienced this impressive turn of events is not clearly understood. Could it be our bees have some 'special qualities' that allow them to exist with high levels of varroa mite? Are the destructive and deadly bee viruses not present in Bermuda? Did the lack of hurricanes or the timely rains aid in the bee's recovery? Is it a combination of all

the above factors? The Department of Conservation Services as well as the Department of Environmental Protection and Department of Parks will continue to monitor the health of the local bee population. Research into queen breeding and the introduction of VSH (varroa sensitive hygienic) queens have been investigated in the event of another dramatic population crash. At the moment, however, we remain cautiously optimistic about the state of the honey bee and continue to enjoy hearing the buzz in the air.

*Thomas Sinclair
Agriculture Officer
Department of Conservation Services*

BERMUDA'S BOTANICAL DISPLAY – A CHELSEA FLOWER SHOW WIN

The Chelsea Flower Show, London, UK, is the ultimate event in the gardening calendar as it's the place to see and be seen. The show took place from 24 to 28 May 2011 and approximately 157,000 people attended through the course of the week.



Flower Show article – Completed Bermuda Display (A Bermuda Honeymoon) – J. Smith

The Department of Parks partnered with the Department of Tourism, local architect Dominique Gurret, and the London based firm of Indoor Garden Design, to execute this production. The Bermuda exhibit, 'A Bermuda Honeymoon Garden' aimed to generate publicity the

island and showcase Bermuda's local flora and fauna.

A contingent of nine employees from the Department of Parks headed to London on 19 May 2011 to prepare the garden display for the Great Pavilion at the Chelsea Flower Show (the Great Pavilion is the area where large exhibits from countries around the world are showcased). The show also served as an opportunity to educate members of the Department of Parks who attended, in the construction and exhibition of show gardens, as well as be representatives in the UK for the island.

The garden exhibit featured a limestone moon gate with a meandering pathway which travelled through luscious, verdant landscapes that led to a



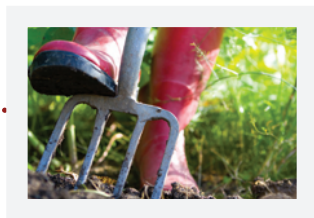
unique pink sand beach. The garden typified all that is best of Bermuda's vibrancy and multihued landscapes which included such local flora as buttonwood, various palm trees, ferns, birds of paradise, the fragrant Bermuda Easter lily, roses, ornamental

shrubs and the Bermuda onion. Visitors to this display experienced a microcosm of Bermuda's landscape and also heard the sounds of tree frogs that resonate through the island every evening.

On press day, a bride and groom model were positioned under the moon gate, and a traditional Bermuda cake was also presented. With great pride, the display won a silver award! This was the first time a Bermuda display had ever been entered in the Great Pavilion at the Chelsea Flower Show and as such was a tremendous accomplishment.

The Department of Parks in partnership with the Department of Tourism aim to present again at the Chelsea Flower Show in the future. The Garden Club of Bermuda also made a generous donation in support of this project and the Bermuda Rose Society kindly donated six Bermuda roses towards the display. We hope to have the support of these generous organizations again.

Jameka Smith
Park Planner
Department of Parks



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PLANTING CALENDAR – WHAT TO PLANT IN THE WINTER...

Vegetables

December

Beans, Beets, Broccoli, Brussels Sprouts, Cabbage, Carrots, Cauliflower, Celery, Chard, Chives, Kale, Leeks, Lettuce, Mustard Greens, Onions, Potatoes, Radish, Rutabaga, Spinach, Squash, Strawberry, Tomato, Turnip.

January

Beans, Beets, Broccoli, Brussels Sprouts, Cabbage, Carrots, Cassava, Cauliflower, Celery, Chard, Christophine, Kale, Leeks, Lettuce, Mustard Greens, Potatoes, Radish, Rutabaga, Spinach, Squash, Tomato, Turnip.

February

Beans, Beets, Broccoli, Cabbage, Carrots, Cassava, Cauliflower, Celery, Chard, Christophine, Corn, Cucumber, Kale, Leeks, Lettuce, Mustard Greens, Potatoes, Pumpkin, Radish, Rutabaga, Spinach, Squash, Sweet Potato, Tomato, Turnip.

Flowers

December

Ageratum, antirrhinum (snapdragon), aster, aubrieta, begonia, bells of ireland, candytuft, carnation, centaurea, chrysanthemum, cineraria, dahlia, dianthus, geranium, gerbera, gypsophila, impatiens, larkspur, lathyrus, nasturtium, nicotiana, pansy, petunia, phlox, rudbeckia, salpiglossis, salvia, statice, snow-on-the-mountain, spider flower/cleome, star-of-the-veldt, stock, sweet william, verbena and viola.

January

Agratum, antirrhinum, aster, aubrieta, begonia, bells of ireland, candytuft, carnation, centaurea, chrysanthemum, cinerariam, dahlia, dianthus, geranium, gerbera, gypsophila, impatiens, larkspur, lathyrus, nasturtium, nicotiana, pansy, petunia, phlox, rudbeckia, salpiglossis, salvia, statice, snow-on-the-mountain, spider flower/cleome, star-of-the-veldt, stock, sweet william, verbena and viola.

February

Acrolinium, ageratum, alyssum, antirrhinum, aster, aubrieta, baby blue eyes, bachelor's buttons, bird's eyes, blanket flower, begonia, bells of ireland, calendula, candytuft, carnation, centaurea, chrysanthemum, cineraria, coreopsis, dahlia, africa daisy, dianthus, forget-me-not, geranium, gerbera, globe amaranth, globe gilia, godetia, gypsophila, hollyhock, impatiens, larkspur, lathyrus, marigold (African), marigold (French), nasturatum, nicotiana, pansy, petunia, phlox, phlox (annual), red tassel flower, rose everlasting, rudbeckia, salpiglossis, salvia, scabiosa, statice, snow-on-the-mountain, spider flower (cleome), star-of-the-veldt, stock, sweet pea, sweet william, verbena and viola.

ON HER MAJESTY'S SERVICE



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