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THE DRIFTING SEED

A triannual newsletter covering seeds and fruits
dispersed by tropical currents
and the people who collect and study them.

Distributed to more than 20 countries.

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Holiday Greetings from The Drifters

**The 11th Annual International Sea Bean Symposium will be held at the
Cocoa Beach Public Library, October 13th-14th, 2006.**

Pages 2-4 Charles Darwin by Wayne Armstrong
Pages 5-6 Christopher Columbus by C. Nelson
Page 7 Drift Coconuts by Roger Hewitt
Pages 8-9 Symposium Review by M. Mitchell

Pages 10-11 California Pignuts by G. Sullivan
Page 12 The Diminutive Entada by G. Sullivan
Pages 13-15 Wracky Potpourri by G. Sullivan &
John Williams
Pages 16-17 News and Notes

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Charles Darwin and Driftseeds

by Dr. Wayne Armstrong

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I was convinced that Charles Darwin played down the role of drift seeds in plant dispersal after he returned to England. Several articles suggested this view, including "Charles Darwin's Lost Theory" by Pete Zies (*The Drifting Seed* Vol. 4 No. 1 May 1, 1998): "Isn't it interesting that a man who authored the *Origin of Species*, postulated survival of the fittest, and who made the Theory of Evolution a household word actually talked himself out of oceanic seed dispersal?" However, a naturalist friend Steven Disparti persuaded me to re-read chapter 12 of the *Origin of Species*, and I am now convinced that Darwin did give a fair assessment of the importance of drift seeds in plant dispersal. In addition to the well-adapted tropical drift seeds that float in seawater for months and still remain viable, there are many examples of seeds and fruits from ordinary plants that have traveled great distances across oceans. This is especially true in the Hawaiian Islands where adaptive radiation of these early colonizers has resulted in some unique and bizarre endemic species. By the way, Darwin's original hypotheses on the origin of species by means of natural selection did not become the Scientific Theory of Evolution until it was repeatedly tested by other scientists.

During his famous voyage around the world on the H.M.S. *Beagle*, Charles Darwin championed the idea of drift seeds and fruits colonizing distant islands, particularly isolated volcanic islands and coral atolls that had never been connected to the mainland. Darwin studied the role ocean currents played in the flora of Cocos Keeling Islands in the Indian Ocean, and concluded that most of the endemic vascular flora was derived from drift seeds and fruits. His original article published in 1836 was reprinted in chapter 20 of *Journal of Researches*, D. Appleton & Company, New York, 1883.

After he returned to England, Darwin conducted flotation experiments with ordinary cultivated plants. In the *Journal of the Proceedings of the Linnaean Society* (Vol. 1, 1857) Darwin stated: "I soon became aware that most seeds, in accordance with the common experience of gardeners, sink in water; at least I have found this to be the case, after a few days, with the 51 kinds of seeds which I have myself tried; so that such seeds could not possibly be transported by sea-currents beyond a very short distance." Darwin also mentioned rafting as a dispersal mechanism for seeds that generally don't float well in seawater. In addition, he stated that seeds contained within pods, capsules and the heads of Asteraceae may be carried by ocean currents and washed ashore on distant beaches. Two years later in his *Origin of Species*, 1859 (Chapter 12 Geographical Distribution: Means of Dispersal), Darwin summarized his experimental data on seed dispersal in salt water, and expressed a higher confidence in dried seeds: "Therefore it would perhaps be safer to assume that the seeds of about 10/100 plants of a flora, after having been dried, could be floated across a space of sea 900 miles in width, and would then germinate." Two years after his somewhat negative statements regarding flotation in seeds of garden plants, Darwin concluded that ten percent of a flora are capable of ocean dispersal and germination. Considering the many thousands of native and naturalized species in temperate and tropical floras, there are a substantial number of species capable of ocean dispersal according to Darwin.

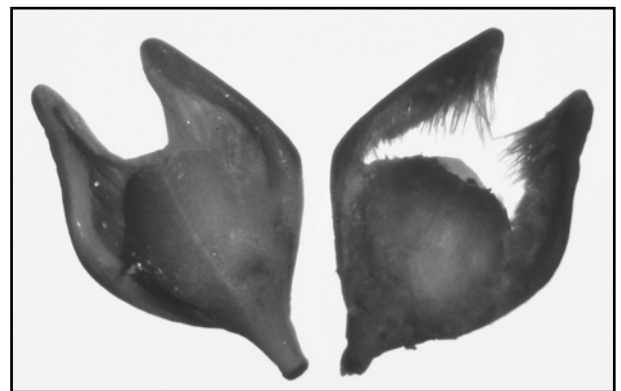
Of all the 250,000 species of seed plants on earth, only about 250 species (0.1 percent) are commonly collected as drift disseminules on beaches; and only about half of these are tropical species known to produce seeds that can float in seawater for more than a month and still be viable. This relatively small number of tropical drift seed species does not include seed plants that are dispersed on vegetation rafts, drift garbage from ships, or true marine seagrasses which live totally

submersed in seawater. Although the total number of drift seed species with long viability periods may be relatively small, they nonetheless form a floral flotilla comprising countless thousands of individuals riding the ocean currents of the world. Studies have also shown that the seeds and fruits of plants not commonly associated with drift dispersal have ridden ocean currents for thousands of years. Although most of them undoubtedly perished, there are obviously some that have reached the shores of distant islands. This is particularly true of the Hawaiian archipelago. After thousands of years of adaptive radiation, some of these early colonizers have evolved into plants that bear little resemblance to their distant ancestors. In spite of these great differences, botanists have demonstrated taxonomic affinities based on chromosome comparisons, hybridization studies and comparative chloroplast DNA.

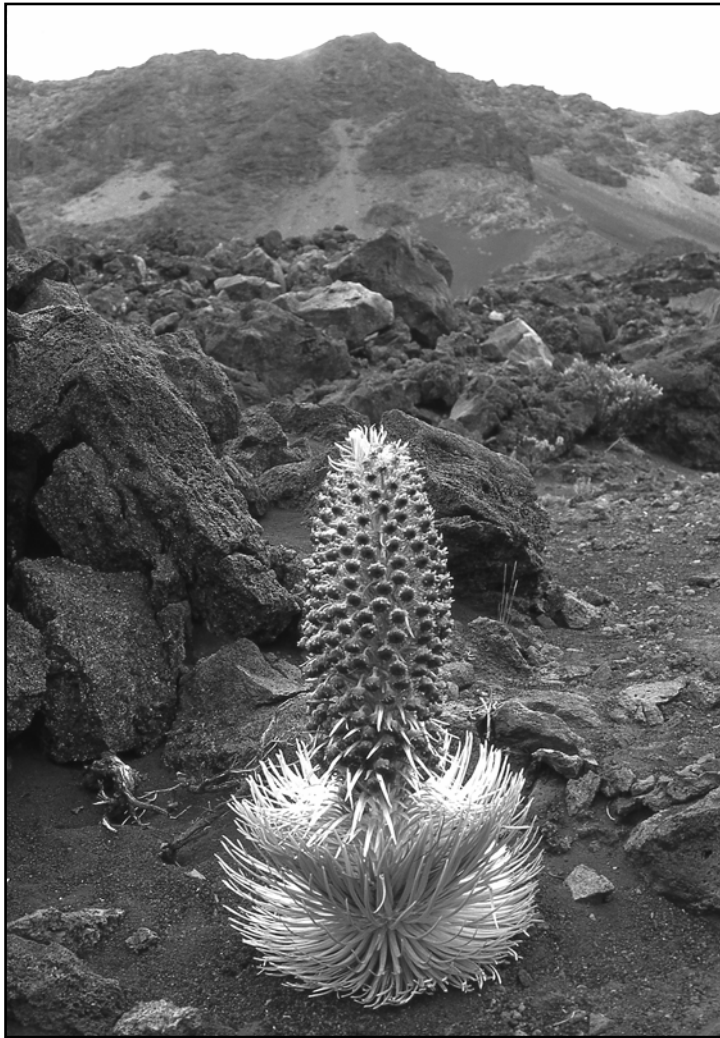
The Hawaiian archipelago has been isolated from continental land masses during the past 30 million years, and yet the 1,000 species of indigenous Hawaiian angiosperms are believed to stem from natural introduction by long-distance dispersal of 280 ancestral plant colonists (Wagner, Herbst and Sohmer, *Manual of the Flowering Plants of Hawaii*, 1990). According to Sherwin Carlquist (*Hawaii: A Natural History*, 1980), only about 14 percent of the original flowering plant immigrants to the Hawaiian Islands are clearly adapted to oceanic drift. If dispersal by birds and air currents are ruled out, it appears that seeds were carried thousands of miles to these islands, possibly by rafting or within protective capsules and pods. For example, California tarweeds are not included with tropical drift seeds, and yet there is overwhelming evidence that an ancestral tarweed traveled at least 3,000 miles to the Hawaiian Islands where it gave rise to a remarkable group of endemics known as the "Silver Sword Alliance." The small seeds from ancestral members of the lobelia family (Campanulaceae) also reached these islands giving rise to an unusual group of Hawaiian lobelioids that appear very different from their ancestors. One of these is the fat-stemmed (pachycaul), drought-resistant alulu (*Brighamia insignis*) that grows on steep sea cliffs on the island of Kauai. Detailed taxonomic studies have clearly shown that *Brighamia* is indeed related to North and Central American members of the lobelia family.

Compared with true drift seeds, such as *Mucuna*, *Dioclea* and *Merremia*, the seeds and fruits of tarweeds and lobelias could scarcely be called drift seeds, and yet they have made long ocean voyages covering thousands of miles. If Darwin is correct that seeds of 10 percent of a flora can survive ocean transport of 900 miles, then many thousands of species throughout the world could have been transported to new locations by ocean currents, long before the voyages of ancient mariners and modern travelers.

(right) Peculiar one-seeded fruits of surfgrass (*Phyllospadix torreyi*), a marine angiosperm that grows submersed on rocky shores of California. The leathery covering (exocarp) on the inner side of the claws on the right fruit has been eroded away, exposing the dense, stiff bristles. The time delay during the weathering process gives the fruit a chance to move away from its parental plant. Horseshoe-like claws enable the fruits to cling to attached algae like a (ringer) in the game of horseshoes. The inward-pointing bristles prevent the claws from becoming detached in the wave-battered intertidal zone. The fruits are only about 4 mm across and are seldom seen by drift seed beachcombers.



(right) *Hemizonia fasciculata*, a sticky annual California tarweed that grows in the dry coastal foothills and valleys. It belongs to the same family (Asteraceae) and subtribe (Madiinae) as the Hawaiian silver sword (*Argyroxiphium sandwicense*). Seeds from an ancestral perennial tarweed drifted out to these isolated volcanic islands millions of years ago, and evolved into the present-day silver sword and its Hawaiian relatives known as the silver sword alliance.



(left) The Hawaiian silver sword (*Argyroxiphium sandwicense*) evolved from an ancestral, self-pollinating California tarweed whose seeds drifted out to these isolated islands millions of years ago. Although it bears little resemblance to the

ancestral tarweed, its taxonomic affinities are based on chromosome comparisons, hybridization studies and comparative chloroplast DNA.



(right) Alulu (*Brighamia insignis*), a rare member of the lobelia family (Campanulaceae) endemic to steep sea cliffs on the island of Kauai. A single rosette of leaves arises from the top of a thick, succulent stem, like a cabbage head on a baseball bat. This remarkable species evolved from an ancestral lobelia relative whose seeds reached these islands millions of years ago from the North or Central American mainland.

Christopher Columbus and Driftseeds

by Dr. E. Charles Nelson

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On 12 October 1492 three ship's boats were rowed towards the shore of a low, forest covered, tropical island. On board were ratings and officers resplendent in their ceremonial uniforms. Flags, including the royal standard of Castile, fluttered from the bows. As they landed, the men fell to their knees, in thankful prayer, grateful for a safe journey and, above all, for standing on dry land again. Their commander rose to his feet and, naming the land San Salvador, took possession of it in the name of the sovereigns of Castile. The commander was Christopher Columbus. He thought he had reached Japan.

In fact Columbus had discovered the island-chain that we call the West Indies. He had charted a course across the Atlantic Ocean, which was to be followed by countless other ships' captains. His own voyages – he sailed to the Americas three times – eventually led to the rounding of Cape Horn and the circumnavigation of the globe.

Columbus' discovery of the West Indies, and his subsequent exploration of the Caribbean and the coasts of America from Venezuela to Honduras, were *not* accidental. One of his biographers, Samuel Morrison, concluded that the voyage which took Columbus to the West Indies and back to Europe was 'no blind chance, but the creation of his own brain and soul, long studied, carefully planned, repeatedly urged on indifferent princes, and carried through by virtue of his courage, sea-knowledge and indomitable will.'

Columbus was a master-mariner, well acquainted with the ocean's moods and threats. Above all he had an intuitive knowledge of the winds and currents that governed sea passages in those days of sail. The currents and winds were uncharted then; they had to be sensed by sailors. Over many years, using his knowledge of the sea, as well as the ideas of scientists and philosophers, the tales and legends of western Europe, Columbus evolved a plan of sailing westwards to the Spice Islands and China. The commercial prizes were rich, and the Atlantic passage was, according to savants with whom Columbus agreed, the shortest way to those eastern islands and countries – and spices – anyway. They believed the journey would not be too arduous or dangerous, as ancient mariners told of islands westwards of Europe beyond the Canary Islands, even beyond the Azores. These fabulous lands included Antilla, an island supposed to have been settled by seven Portuguese bishops, and the Islands of St Brendan, popularly believed to have been discovered by the Irish saint on his remarkable voyage.

Evidence that there was a land beyond the western horizon was provided by the ocean's flotsam. Ferdinand Columbus, Christopher's illegitimate son, in his biography of his father, wrote about the finding of drift wood and other debris on beaches in the Azores and in the eastern Atlantic before his father's first voyage. A Portuguese royal pilot, Martin Vicente, had fished out of the sea about 450 leagues (2,200km) west of Cape St Vincent (the southwestern tip of Europe), a piece of timber that was ingeniously wrought 'but not with iron'. Another piece of wood, similarly fashioned, was found by Pietro Correa da Cunha, Christopher Columbus' brother-in-law, on a beach on Porto Santo, the island that lies 50km to north-east of Madeira – Rosemary Hood, resident on Porto Santo for several years, has now remarkably and diligently reported American sea-beans, including the indicative *fava de Colom* (bean of Colom: in other words, Columbus' bean) from the island's beaches (*The drifting seed*

11 no. 2). Both the bits of timber known to Columbus were found after several days of strong westerly winds, so it was reasoned that they had floated from the west. As well as timber, bits of 'bamboo', which were very much larger than any seen elsewhere by Europeans, were sometimes found on the coast of Porto Santo. The canes were so large that they were said to be capable of holding nine carafes of wine.

More extraordinary evidence of a land beyond the horizon was seen by Christopher in Ireland, during his visit to Galway. '*Nos vidimus multa notabilia, et specialiter in Galveji, Hibernie, virum et uxorem in duobus lignis areptis ex mirabili persona*': 'We saw many wonders and especially in Galway, Ireland, a husband and wife, of surprising appearance, borne on two pieces of planks.' There were other reports of the bodies of men 'with larger faces and different aspects than Christians' washed ashore on the island of Flores in the Azores. At Cape Verga, on the coast of west Africa (in modern Guinea), two canoes with cabins were seen, and were believed to have drifted a long way. Both the bodies and the canoes were unlike any previously known to the much travelled Portuguese and were presumed to have come from one of the fabled lands beyond the horizon.

Ferdinand Columbus also noted that his father was told by some of the people of the Azores, that 'pines' which were not found growing there were occasionally washed ashore after westerly winds, especially on beaches on Faial and Graciosa. The 'pines' were surely drift-seeds such as sea beans, sea hearts, or horse-eye beans – I myself found several sea beans (*Entada gigas*) on the north coast of Sao Miguel in 1992 during a holiday on those wonderful islands. Samuel Morison recalled that he was given a *favo do mar* (literally sea bean) by an Azorean fisherman, and that on Porto Santo the beans were called *fava do Colom* (Columbus' bean) because they were the seeds which had given Columbus the idea of sailing westwards.

Ferdinand's narrative indicates that his father surmised that land must lie west of the Azores, if on these shores one could collect seeds of plants which did not grow there, and bits of timber carved and shaped by crude tools. No doubt Christopher Columbus was also impressed by the stores of bodies washed ashore with features unlike those of 'Christians'. His first voyage proved him correct and these crude harbingers of the Americas led to the continent's 'discovery'. Indeed it is possible Columbus saw similar sea-beans on the shores of San Salvador when he landed, and that some of the shrubs on the shore were the same species which produced the seeds that led him to formulate the idea of the 'Enterprise of the Indies', his momentous voyage across the Atlantic Ocean, beyond the western horizon.

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One does not discover new lands without consenting to lose sight of the shore for a very long time.
André Gide

Update to “Drift Coconuts”

by Dr. Roger A. Hewitt

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My recent article started with two paragraphs reviewing Brochard x Cadée (2005) which somehow did not get listed as a reference. It is given below and publication details are also given at <http://www.knnv.nl/strandwg>. My coconuts have now passed 700 days in seawater dates (except B sunk and removed) the densities for 700 days, measured at 17°C being A=0.93, C=0.88, D=0.94, E=0.86 and F=0.95 g/ml respectively. Coconut A now appears to be sinking quickly compared to the one refloated by J. V. Dennis in July 1971 with *Manicaria* and other seeds (J. V. Dennis pers. Communication October 12, 2001, he stated they were seen floating on September 3, 2001). These seeds were moved from Princess Anne in Maryland to Florida after he died, the *Manicaria* sinking due to breakage and the *Cocos nucifera* is still floating after 34 years (E. L. Perry pers. communication, October 2005). Probably there is a dynamic balance between decay of endosperm just under the “eyes” tending to sink coconuts by admitting water and general internal decay (or stasis) in which the endosperm is changed into gas which cannot escape there.

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Wayne Armstrong has added a new item at the Cafepress.com online store. The same great sea-bean t-shirt design is now being offered on a tile collection box. Check it out; mine here is sporting some of the great sea-beans I just brought back from my December trip to Mexico along the Costa Maya.

Symposium Review, 2005
by Margie Mitchell
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With the threat of polluted water and debris from Hurricane Katrina looming in the currents off Florida's east coast, seabeans and beachcombers from all over gathered at the Cocoa Beach Library for the 10th Annual International Seabean Symposium on October 14th and 15th, 2005. Fortunately, all that reached our shores during the symposium was a lot of sargassum, full of all its usual treasures (and trash). We had a great weekend at the library and out on the beaches.

This year's keynote speaker, Dr. Curt Ebbesmeyer, gave us a timely update on the amazing workings of the ocean's currents with his talk, "A Look at the North Atlantic Gyre." Illustrating how the currents flow, spin, and interconnect, with tales of rubber ducks, NOAA drift cards, and serial-numbered lobster trap tags cut loose by hurricanes, he reminded us that the drift we find on local shores can come from Great Britain, Africa, or even the Pacific. Of particular concern this year is evidence that Gulf of Mexico drift from the mouth of the Mississippi often washes ashore in south and central Florida. Currents would likely bring debris from Katrina's devastation of the Gulf Coast to our area in about two months, just in time for the normal fall weather pattern of sustained east winds to push it ashore. A continuous stream of detritus from the Gulf could be offshore here for several months. Dr. Ebbesmeyer put out a call for beachcombers to be alert for any drift of identifiable origin and to get in touch with him if they find anything of interest. Contact him at CurtisEbbesmeyer@comcast.net with your news or visit his web site at www.beachcombers.org for more information.

This year's symposium had more speakers and multi-media presentations than ever before. Ed Perry led off on Friday with his always-popular "Beginning Beachwalking," speaking to a record crowd. Cathy Yow from Galveston, Texas, followed with "Nature Inspiring Art," demonstrating how to create beautiful, unusual jewelry and baskets from materials found everywhere in the natural world. Christopher Boykin rounded out the day with his extremely entertaining slide show, "The Search for the Great Chachalaca—Beating the Yucatan," documenting last year's Drifters trip to Mexico. After hearing that there was so much wrack that "it was hard to focus," and that the group returned with 2,499 "keeper" beans, everyone in the room wanted to sign up for this year's return trip. Too late! All 14 spots are already reserved. If you want to find out what the Great Chachalaca really is, you'll have to sign up early for next year's trip.

On Saturday we were treated to a new video presentation about beachcombing in Cornwall, "The Wrecking Season." This fascinating look at beachcombing on the other side of the Atlantic, known locally as "wrecking," featured the life of recently-deceased Drifter Nick Darke. Florida beachcombers were interested to note that many of the items shown washing up on the shores of Cornwall looked very familiar. And everyone was fascinated to see how local wreckers put the ocean's gifts to use -- from selling fishing gear back to fishermen, to building all kinds of structures from beachcombed driftwood. Later that afternoon, Paul Mikkelsen once again favored us with his beautiful multi-media presentation of Cathie Katz talking about the magic of the ocean on BBC Radio.

Exhibitors brought us a great variety of beach treasures, sea-bean jewelry, books, plants, sea-bean identification displays, and artistic creations, as always. First time exhibitors Patty Foreman and Ted Tanner displayed "Sea Bean Fever," the story of their seabeaning travels in their sailboat, along with a collection of beans and floats found along the way, as well as jewelry made by Patty. Cathy Yow returned after a two-year absence with her collection of sketches and jewelry from nature (including some not-so-natural "ban bean" necklaces and eyeglass holders made from beachcombed roll-on

deodorant balls). Mike Stewart also returned after an extended absence with his display of all manner of beach treasures, including beans, bones, and bottles. Other exhibits included Cathie's famous sandbox, Deborah Trachtman's stunning sea-bean jewelry, Nan Rhodes' "Mangrove Mania," Krieger Publishing's great selection of nature books, Jim Angy's wonderful nature photography and "Still Nature" CD series, Curt Ebbesmeyer's "trash or treasure?" collection, Michele Kelley's huge seabean collection, and Paul Mikkelsen and Mary Canada's widely varied assortment of beans, pods, jewelry, plants, and free seabeans for the kids.

Bean-a-thoners hit the beach on Saturday morning with great results.

- David Williams again took the **Most Beans** award with 47 species. Honorable Mention went to Stephanie Bernstein (who came all the way from Arizona to compete) with 40 species, and Alice Surrency with 34 species.

- The **Young Beaner** award went to 5-year-old Emma Reinecke, possibly our youngest winner ever, for finding 8 different species, including an eggfruit. Honorable Mention went to frequent winner in this category, Torrey Cranston, who found 20 different species, including a candlenut. Watch out David, Stephanie, and Alice. Torrey's gaining on you!

- Jane Spake won the **Cool Bean** award for an *Oxyrhynchus*.

- The **Non-Bean** Award went to Elaine Norton for an airplane traceable back to the owner; Honorable Mention to Sheri Ryser for a large poodle bank, and Steve Bernstein for a Cuban identity card.

- No **Grand Slam** or **Super Slam** this year. It seems that no one could leave the best keepers on the beach for the Bean-a-thon when they turned up earlier in the week.

Odd Bean contest awards went to Glenn and Cheryl King for the **Thinnest Heart**, Mari Ann Hannon for the **Largest Starnut**, and Dawn Walker for the **Thickest Banded Hamburger**.

We were again fortunate to have so many wonderful contest and raffle prizes donated by local businesses and Drifters. Some of the most popular raffle prizes came from symposium participants; to name only a few -- Ann Bees and Judie Clee's Bermuda basket (brought in person all the way from Bermuda); Gina Reed's seabean and shell wreath; Alice Lowe's seabean candle holder and framed polished seabeans; Alice Surrency's Cathie's bean, Mary's bean, and brown nickarnut keychains; Deborah Trachtman's, Cathy Yow's, and Patty Foreman's beautiful seabean jewelry; and Nan Rhodes' potted mangrove. Raffle ticket sales are the primary means of keeping *The Drifting Seed* afloat, so your generosity and creativity are much appreciated.

Also many thanks to all who helped with set-up and clean-up and with all the little details of making the symposium run smoothly. For those of you who couldn't join us this year, keep an eye on the web site for photos. We'll look forward to seeing you next year at the Cocoa Beach Library. Mark your calendars for October 13th and 14th. We'll see you there!

How we spend our days is, of course, how we spend our lives.
Annie Dillard in *An American Childhood*

California Pignuts
by Dr. Gerald Sullivan
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It is fairly well known that the sightings of stranded seabean on the California coast are quite infrequent. Generally, it is difficult even to determine a wrack-line.

Gunn & Dennis stated that “currents are of little assistance in bringing tropical disseminules to the long coastline of the New World which faces the Pacific.” Maps depicting the world’s currents show both the California and Humbolt currents converge and flow predominately east to west, thereby, carrying away most drift seeds including those which may have originated in California. Consequently, there are few reports of stranded seabean from this area of the world.

In July 2002, I discovered one-half of a black walnut shell lodged against a two-foot embankment at Grover Beach, Ca. This finding might easily be explained since *Juglans nigra* grows fairly abundantly in northern California. The following year, three drift disseminules were discovered stranded on the beach at Patrick’s Point State Park, located in California’s most northern part, and tentatively identified as *Lithocarpus densiflorus* or tan bark oak. This tree is also quite prevalent in that area.

In November 2003, Jade Sullivan reported the finding of a single seabean on the beach at Santa Cruz and immediately identified it as a kukui nut (candlenut) *Aleurites molucana*. It should be noted that this is the only seabean name he has in his botanical repertoire. Examination of electronically transmitted images of the seed resulted in a tentative identification as a tropical walnut (Jamaican walnut) *Juglans jamaicensis*. The “real thing” was sent to Editor Ed and was positively identified as *Carya glabra* or pignut hickory. This may not be the “mother lode of California gold,” but it is a significant find.

In January/February, Jade discovered two additional disseminules on the same beach which were identical to the original pignut. He stated, “I think there is a secret plantation of pignut hickory trees growing in the Santa Cruz Mountains and the nuts are being washed down to the San Lorenzo River and deposited at my feet at the beach.” He may well be correct.

Some of the more common names for the seed of *Carya glabra* are: broom, red, swamp, sweet pignut, smoothbark, coast pignut, false shagbark and pignut hickory. This nut is common to the Florida and Gulf coast beaches. The general distribution of this hickory includes Maine, Michigan, Illinois and Iowa; southward into Texas, Louisiana and Arkansas; then eastward into Florida.

It is interesting to note that this distribution pattern is the same for water hickory, pecan, mockernut, white walnut, black walnut and English walnut. All of these seeds belong to the family Juglandaceae and all possess a bitter taste due to a variety of chemical compounds designated as juglones.

Upon examination, there appears to be a considerable variation in physical appearance among the pignut hickories as shown in the photographs below. Also refer to “*World Guide*,” page 121.

Enjoy all the little miracles.



California Stranded Pignuts



Mustang Island, TX Pignuts

In recognition of his diligence, Jade Sullivan was presented the following award. On the back of The Drifters official postcard (the one with all the beautifully colored seabean) was embossed:

Drifter's Proclamation

***The title of DRIFTER TRADER JADER is
Officially sanctioned and bestowed upon ye
By the ordained "Drifters" of the sect "Drifting
Disseminules" and ye shall forthwith/henceforth
Be fully recognized as a beach-stranded nutt.
Hipp Hipp Hipp Hipp***

Several years ago I had succeeded in getting common sea bean of the West Indies, Mucuna urens, whose seeds are thrown up on our beaches by thousands, to grow and produce seeds. While this had only made a moderate growth before it became rampant and soon climbed to the very summit of the hammock where it is now supreme, opening its fine yellow flowers in winter and ripening seeds.
Charles Torrey Simpson in *Florida Wildlife*, 1932

The Diminutive *Entada*

by Gerald Sullivan
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How small is small? Have we now encountered the smallest of the small? I think so. In previous articles, seabean fables were cited indicating that others had seen *Entadas* which would fit within the diameter of a U.S. quarter or nickel. "Believe it or not," such a seed does indeed exist.

Voila! "OK, OK, you shamed me into it," responded Ms. Billi Wagner. I swear it was like pulling teeth to get her to part with her prized *Entada* seed for even a short period of time. I feared she would go into cardiac arrest when informed her treasure had since been transferred to Ed Perry, via U.S. postal service, for its official confirmation (blessing) as an *Entada*. I must admit that I really did, indirectly, do a little arm twisting to get Billi to enter the miniscule one.

Jokingly, Billi was asked, were you shipwrecked prior to finding the small one? She responded, "No, I was not shipwrecked on Midway Atoll NWR. I volunteered there 3 months. I wrote a report in the newsletter on the beans I found there in the carcasses of the albatross chicks that died full of "marine debris" (plastic trash). The adult birds picked up drift beans, pumice and a variety of plastic items floating with the bird's natural food (flying fish eggs and squid). They regurgitate everything into the juvenile bird. Obviously a gut packed with plastic does not allow for absorption of nutrients."

So, how small is the smallest? Initially, Sullivan entered a seaheart with a size value of 266, which was soon replaced by Ms. Fay Rice's seaheart at a low 174; but now, Billi Wagner's *Entada* calculates in at an unbelievable value of only 32.

Calculations:

$$\begin{array}{rclclcl} \text{Height} & \times & \text{Width} & \times & \text{Weight} & = & \text{Size} \\ 20\text{mm} & \times & 18\text{mm} & \times & .09 \text{ oz.} & = & 32 \end{array}$$

The photos below demonstrate the wee size of this *Entada* seed when placed on a U.S. nickel or quarter.

It appears that we may have arrived at journey's end. The Godzilla and Diminutive *Entadas* may well represent the largest and smallest of all the *Entadas*.



Wracky Potpourri
by John Williams* and Gerald Sullivan
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Can you TOP this?

During a seven week period this summer a total of eleven toy spinning tops washed ashore on the Texas barrier isles of San Jose (3) and Mustang (8). These are kids' tops in which one wraps an appropriate string around the crown, extending it to the tip, then winding it around and around, terminating near the crown. With a toss toward the ground and a flick of the wrist, the top is released and the spinning begins. The novice sometimes experiences a conk on the noggin since a high skill level is necessary to spin a top proficiently.

Please examine the accompanying photo and note that some of the tips are missing and others badly corroded. They are composed of a hard, durable plastic in which the colors have faded extensively in some instances. All are nicked, scratched and pitted. One had a colony of six barnacles one inch long attached around the crown, while another exhibited a white worm-like encrustation on it. This tends to suggest their voyage had not been of short duration. The crowns of two of the smaller tops appear to have been decapitated by a sharp instrument. Conceivably this would reduce drag and allow the modified top to spin faster and for a longer duration.

All tops were examined carefully with a powerful magnifying glass and also with a laboratory dissecting scope which revealed the following raised lettering on six of the tops:

1. SUPER LASER (large teal)
2. GALACTICO (lg. yellow & lg. pink)
3. MINILASER PAPITA (small blue, green & pink ones)

A "Toy crafter" enthusiast speculated "the tops probably originated in Mexico or Central America since those country's youngsters generally play outdoors instead of a steady diet of TV and computer diversions as in North America where top spinning is no longer considered a major sport."

If you have encountered stranded tops on your shores, please share your sighting and thoughts with us by e-mailing John at williams@utmsi.utexas.edu.



Turtle Bites

One day in June this year, I noticed John Williams examining an empty plastic oil container whose edges were perforated with the neatest diamond shaped holes. The diamonds were clean cut as if a sharp razorblade had been used. This was my initial introduction to turtle bites. John was amazed that I knew nothing about this phenomenon. In fact, he asked that I collect a number of plastic samples with T. B. for him to use as training props for a July meeting in Maui.

To my surprise, I could have filled a request for a hundred or more the first day. I quickly became very selective and chose only the finest. The turtles seemed to have sampled every floating piece of hard or soft plastic, styrofoam, tar, etc. Several studies on the stomach contents of loggerhead turtles found bits of hard plastic in over 50% of those animals examined.

One could easily conclude that turtles must be brain dead as far as food selection is concerned. If you are unfamiliar with T.B., please examine the accompanying photo. Dr. Blair Witherington addressed this problem in a newsletter, 2002. Also on page 57 of *Sea-Beans from the Tropics*, Ed Perry states: "Many of the sea-beans in our collection bear rasping scars that suggests encounters with some kind of toothed or beaked creature (Plate 7.5)." Examination of this photo shows a rasping signature on the tropical almond, but also clearly demonstrates a pattern of small, shallow indentations on the surface of the seaheart, hamburger and nickernut. If one were to examine the opposite side of these drift seeds, one would find an identical impression of these indentations which were made by the compression of the powerful upper and lower mandibles of the sharply pointed turtle beak.

The "Yellow Ducky Saga" continues

Find a yellow ducky in the wrack and win \$100! Wow! I've got mine. It just washed ashore in June. NOT! It was simply an imposter. Never the less, it is a yellow ducky, so I've got mine.

This specific one was a promotional tool for Hiram Walker Distillery to promote its popular drink "Duckfart" On the sides of the duck are the raised printed words KAHLUA and DUCKFART. There may be a few of you out there unfamiliar with a Duckfart. It is nothing more than a layered shooter composed usually of 1/3 oz. Crown Royal, 1/3 oz. Kahlua, and 1/3 oz. Irish Cream.

This poor yellow ducky was undoubtedly savagely attacked by a hoard of wild Ninja turtles. This was evidenced by ten identifiable turtle bites to the body, the absence of tail feathers and five beak indentations to the head. Apparently the plastic of the head was thicker and harder than the rest of the body. This attack is simulated by using "seabean turtles" in lieu of the Ninja in the accompanying photo.



True Seabeads

What in the devil is a true seabead? Well, let me tell you. It's a bead which has washed ashore and possesses a hole in the upper one quarter of the bead as demonstrated in the photo. It may be any color or colorless, any size, shape, clear or opaque plastic, round or angular, and buoyant. Originally these were thought to be "El Sinko" since they did not float. Ed Perry was quick to point out that the buoyancy test must be performed in the sea water whence it arrived, not the bathroom tap water! So What! No one ever proclaimed that I was perfect. I actually had envisioned massive armies of these seabeads rolling merrily along the floor of the Gulf.

In the past seven months 145 true seabeads have been collected from a five-mile stretch of beach on Mustang and San Jose Islands in Texas. A three-year total for these shores exceeded 360. Another seabead collector claimed a collection greater than 100 over a portion of two summers from a small part of the north portion of Padre Island.

How's your math and imagination? Applying the 2% rule, if I understand it correctly, these seabeads represent a mere 2% of the total floating around. Therefore we are dealing with an excess of approximately 450 true seabeads which calculates out to be: $2\%/450 = 100\%/X$ $X = 22,500$

Now remember, this is for only a rather short beach frontage on three barrier islands. Since Texas has more than 300 miles of coastline, does that mean the number of seabeads out yonder could be increased by a factor of 50 or 60? WOW, (1,125,000 – 1,550,000) that's an unbelievable number of ponytail SCRUNCHIES – LOST AT SEA.

Perchance you have also encountered true seabeads during your search for seabeads in the wrack, let us know.



* John Williams is a newly arrived Marine Educator at the University of Texas Marine Science Institute, Port Aransas, Texas. His email is williams@utmsi.utexas.edu.

There are some things that are so serious that you have to laugh at them.
Niels Bohr, Physicist

News and Notes

In a couple e-mails to us from Drifter Elaine Norton (Ft. Lauderdale, Florida) we can all get an idea what beach conditions were like when Hurricane Wilma passed through the state and out south Florida:

first e-mail: Sorry for getting back to you with the "goods" so late. I had to have surgery on my left hand to remove a tumor the week B-4 Thanksgiving (under anesthesia...ugh) which threw my schedule off somewhat.

Anyway, here is the count for Hurricane Wilma on what I call the "Pre eye-wall" collection retrieved a few hours before dark on Sunday 10-23-05 during the oncoming feeder bands:

5 hamburger beans	1 pond apple
1 sea purse	1 mahogany
1 nickernut (beige)	1 fishing bobber
4 bay beans	1 lobster tag (1997-98)
2 black pearls	1 "warning" unknown tag
1 laurelwood	
2 toy appendages	
1 kapok thorn	

second e-mail: Here is the count for Hurricane Wilma on what I call the "Post eye-wall" collection retrieved after the winds backed down to 20-25 mph on Monday afternoon 10-24-2005 during the outgoing feeder bands.

I "won" (what I like to call) the **Super Duper Grand Slam** on this adventure!!
Oxyrhynchus (my very first!!), Mary's Bean, Sea Purse, Hamburger Bean, Nickernut, & Seaheart. Quite impressive, if I must say so myself!!

Here is the official count:

1 oxyrhynchus
2 mary's beans
2 sea purses
21 hamburger beans
11 nickernuts
16 seahearts
12 bay beans
2 black pearls
1 anchovy pear (large 7-1/2 cm)
5 moonflowers
5 starnut palms
1 pond apple
2 brown coral beans
1 laurelwood
1 prickly palm



- 2 unidentified palms
- 1 unidentified bean
- 1 "possible" Hurricane Katrina bone (editor's note: this looks like sea turtle bone)
- 1 "possible" Hurricane Katrina tree trunk (only took photo of this one....may be a magnolia washed up on the beach)
- \$1.48 in beach coin money

Attached is a download of the entire booty (excluding tree trunk), with following emails of some close ups.

E. Norton, South Florida Drifter reporting




John Beerensson had a great day beachcombing Satellite Beach on September 15th. Besides a smooth porcupinseed and a purple coralbean, John found a seed from a large ear pod tree, *Enterolobium cyclocarpum*. Some debate exists as to whether or not this species even floats, but John's find adds more evidence that it does. Their pods are rather flimsy and do not hold up as well as the small ear pod, *Enterolobium timbouva*, so John's seed may have been released from the pod just

before or shortly after stranding. These seeds have an intrinsic beauty, and Cathy Yow from Galveston, Texas reports them as one of her favorite seeds for use in seed jewelry. (pictured right as true size)



What is a Sea-Bean, Anyway?



Sea-Beans are actually seeds from common trees and vines that grow in the tropics. Washed out of rainforests, these seeds are carried by streams and rivers like the Amazon. Eventually some reach the ocean where mighty currents transport them thousands of miles, finally bringing them to rest on foreign shores.

Sea-Beans are symbols of good luck and longevity to beachcombers fortunate enough to find these rainforest gems washed ashore on a coastal beach.

Special: \$10 each, sea-bean tote bags with the 2005 Symposium "Mucuna, Entada—It's a Sea-Beaners Philosophy" design on one side and the definition of a sea-bean on the other. Please contact The Drifting Seed at P.O. Box 510366, Melbourne Beach, Florida, 32951, USA. Make checks payable to The Drifting Seed, please add \$2.00 for shipping. For larger orders, add a little more.