The Good News

The official newsletter
Of the USS Bethel

A member of Starfleet: The International

Star Trek Fan Association.

Newsletter Editor FCapt. Elizabeth Weber
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[R3 List] Space Center Houston Update #2

Region Three's Ninth Annual Space Center Houston Tour held on Saturday, September 29, 2001.

We hope to gather everyone around at 9:30 to 9:45 a.m. in the front of Space Center Houston. The park opens up at 10:00 and this should allow any one who wants to take the first tram tour of the NASA Johnson Space Center facilities in a cooler part of the day. Please dress comfortable with shorts, jeans, and chapter t-shirts. The tour includes the two Mission Controls, astronaut facilities, labs, and Rocket Park.

Also we will be handing out the discount coupons at this time. So far, two dollars off the normal fees of $14.95 for adults, $10.95 kids 4 –11. I will be checking with the center after a general head count, to see if we can arrange a better deal. Parking is three dollars.

During the rest of the day, Region 3 members have the opportunity to partake in the Space Center's other numerous attractions. The IMAX theater showcases films about NASA's past or ongoing travels. Mission Status Center presents live updates on current

NASA activities. Kids' Space Place is the perfect place for young cadets to receive hands on contact with the space program. The exhibits change constantly, so it
is never the same event. So if you have been here before, come on back and see what is new.

http://www.spacecenter.org/centerinfo.html is their website for information and how to travel to the center.

Unfortunately, their exhibit 'The Need for Speed' will have moved on. The main Regional event is our Top Gun Tournament. Fleet members try their luck at landing the space shuttle on a computer simulator.
Bragging rights, certifications, and shuttle mission decals are awarded to the best team, best individual, and the infamous "Swamp Rat".

We will be doing sign ups and explanations, when we gather in the morning.

Around 5:30 or 6:00 p.m., we hope to have dinner in the Bay Area. We have two choices. The old haunt of Mr. Gatti's. They have expanded since our 98 visit. We should be able to get a separate area reserved and the kids of all ages can use the bigger game room. Gatti's is also right across the street from Barney's, when we have gone to shoot pool and darts in the past. They just reopened after a major remodel.

Or the second choice is Ryan's, which is close to the Best Western where the Rhyanna is staying. We would have a bigger food selection for folks. I am hoping we can arrange to get some space in the back, but it depends up numbers.

On Sunday as a bonus, we are hoping to get group together visit the Battleship Texas. We will be arranging for a meeting time and place, once we see how many are planning to go. The Ark Angel is contact with the park and hopes to strike the colors for the Texas. Bring your cameras for that.
http://www.tpwd.state.tx.us/park/battlesh/battlesh.htm is their site.

Hotel information - the list has grown so big, it is easier not shoot It through the list server. Please e - mail privately me for the complete listing or you can go to http://www.clearlakearea.com/ Click on the visiting section of the site. The Rhyanna is staying at the Best Western. on 889 W. Bay Area Blvd right off I - 45. The number is (800) 528-1234 or (281) 338-6000. I can also recommend the Comfort Inn on Nasa Road One, (281) 332-1001 or (800) 228-5150. Do not choose the Quality Inn – Nasa, we had a ton of problems with them last year.

I will a head count for discount coupons by September 12. We are continuing the tradition of educational packets for kids, so I will Also need how many cadets you are bringing. If you want to attend dinner Saturday night, how many and which place you would prefer – Mr. Gatti's or Ryan's. Also if you have interest in the Battleship Texas on Sunday, let us know. We might be able to arrange a group discount for that.

So for further information and head count contact:
Rear Admiral Michelle Fanelli
Denmother of the Old AV
VRC - South
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We will be issuing another update as we get closer. This will be our last Space Center Houston trip until 2003, when we move to alternating years with Ren Fest. So if you have never attended this before or just want to do it one more time, come on down and enjoy experiencing space exploration with Region Three. We hope to see yu'all on Saturday, September 29, 2001.

Shell's Shameless Plug has ended. <G>

UPCOMMING EVENTS

USS Bethel

C/O: Joy Flynt

Oct. 20th-21st: Sci-Fi Toy show, Plano, TX**. Special Guest:**

TV's Batman-Adam West

TV Batman-Robyn-Burt Ward

TV Batman-Batgirl-Yvonne Craig

TV Batman-Catwoman-Julie Newmar

TV Batman-Riddler-Frank Gorshin

Star Trek-Borg Queen-Alice Krige

Nightmare on Elm st-Alice-Lisa Wilcox

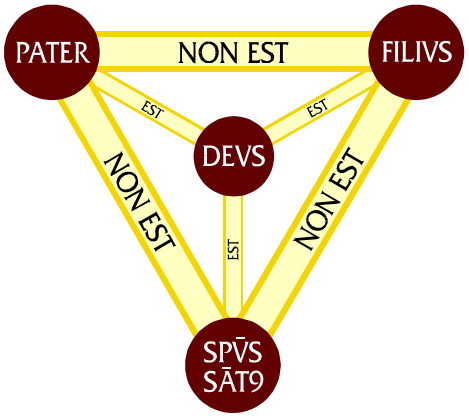
Star Wars & Leprechon-Warwick Davis

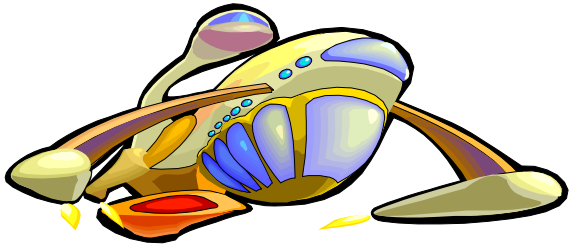
Star Wars: Darth Maul-Ray Parks

Oct.27th - 28th: Sci-Fi Toy show, Austin, TX

Nov. 3rd-4th: Sci-Fi Toy show, Bossier City, LA**. Special Guest**: Richard Biggs Babylon 5 - Dr. Franklin
Nov 22nd: Thanksgiving Day

December 25th: Christmas Day





Coral Reefs in Ireland
Fleet Capt. Elizabeth Weber

Yes, it is true, Ireland has its own coral reefs. They are not as noticeable as tropical coral reefs because they are in deeper water, and perhaps not as extensive, but they have a similar structure and richness of marine life.

The discovery of a "major deep-water coral reef province" in the Porcupine Basin in May 1997 (appropriately the Year of the Coral Reef) has highlighted our ignorance of what lives in the sea around Ireland.

It is not widely realised that reef forming coral is present off the west coast of Ireland, reflecting the lack of offshore ecological research. Indeed, the reefs are formed by two coral species, *Lophelia pertusa* and *Madrepora oculata*, which interconnect with tubes of the worm *Eunice norvegicus*.

Tropical coral reefs are a major tourist attraction and fishery resource, and deep water corals also have this potential. Tours in deep water submersibles are already planned to the *Titanic* shipwreck, and would also be feasible to deep water corals and other marine habitats. The value of the reefs to fisheries has yet to be assessed but is likely to be significant for some species. The coral was first discovered off Ireland in 1869 by a Royal Irish Academy and Royal Dublin Society sponsored cruise. Until recently little to nothing more was known about this coral in Irish waters, and most research in our offshore waters has been by foreign ships. In the late 1960's and early 1970's, fishing trawlers from Dingle caught coral in their nets off the south-west coast, some of it from as shallow as 80-100 m depth.

Recently, geologists from the Dublin Institute of Advance Studies, National University of Ireland college's Dublin, Cork and Galway, Geological Survey of Ireland, and Petroleum Affairs Division of the Department of the Marine and Natural Resources, have become very active in offshore research. In 1997, they and researchers from Belgium, Germany, Russia, and elsewhere in Europe, noticed hundreds of circular 'mounds' on sonar images. Underwater video showed at least some were covered by an abundance of coral. They occurred in a 1200 km ^{2} area, at depths of 600 to 700 m, and 200 - 400 km from the west coast of Ireland.

The mounds are at least partly composed of fragments of corals, shells and other sediments. There may also be a significant contribution of carbonate material derived from bacteria using methane and sulphates as an energy source.

The distribution of coral has been linked with oil and gas reservoirs.

Information on the coral has largely been obtained from surveys by geologists whose research is driven by the search for oil and gas reservoirs under the seabed. Extraction of oil and gas from such depths is already conducted in other seas.

It may be coincidence, but the occurrence of deep water coral has been linked with seepages of methane and other gases from oil and/or gas reservoirs beneath the seabed. Thus the distribution of coral may be an indicator of the presence of oil and gas. Indeed, there was an unsuccessful court challenge by Greenpeace who tried to prevent oil and gas exploration near coral reefs in UK waters on the basis of the need to protect the coral under the EU Habitats Directive.

What the relationship may be between the coral and methane seeps is a subject of current scientific debate. Opinions range from there being no relationship, to that the coral feeds on bacteria which feed on the methane, and/or that the coral grows on compacted carbonate sediments.

The exploration of the oil and gas industry is stimulating research about the reefs, and it seems that deep-sea oil and gas extraction will become inextricably linked with the study and conservation of their new deep-sea neighbours, the *Lophelia* reefs.

Deep water reefs have a biodiversity as rich as tropical coral reefs

Over 860 species of animals have been recorded on *Lophelia* reefs in the north-east Atlantic, and about 300 on single reefs off Norway, Shetland and Bay of Biscay. Such a richness of species is similar to that on shallow water tropical reefs, although *Lophelia* reefs lack plants and plant eating animals. These numbers are remarkable for a single habitat when one considers that about 6,000 species occur in all of Ireland's coastal marine environment.

On a seabed largely of sand, mud, gravel and shell, the coral reefs form the most structurally complex physical habitat for species in the deep sea. A rich diversity of animals also occurs around the reefs, some burrowing 2 m down into the sediments.

Amongst the coral branches occur fish (redfish, saithe, cod, ling, and tusk), squat lobsters and other crustaceans, molluscs, starfish, brittlestars, sea pens, and sea urchins. A wide variety of animals grow plant-like attached to the coral, including sponges, bryozoans, hydroids, and other coral species. As is the case for most species living on hard surfaces, most feed by catching plankton and particulate matter from the water.

Some species appear unique to the coral reefs, and different studies have found 5 to 20 species that only occurred on living coral. For example, the worm *Eunice norvegicus* typically builds its calcareous tube amongst the coral, and large numbers of the scallop-like mollusc *Acesta excavata* attach to the coral. A snail, *Alvania jeffreysi,* predates a foraminferan parasite of the coral, and other unique biological interactions probably remain to be discovered.

Species which are not unique to reefs may still benefit from them. For example, reefs provide nursery and resting areas where smaller fish can hide until large enough to avoid predators in open water and larger fish can sleep undisturbed. Animals which collect waterborne food, so called suspension feeders, congregate on the reefs. They pass on this food to other species in the reef food web. The physical banks of reefs may also form barriers to sediment slides which can disturb large areas of sea bed.

However, the importance of the reefs to other species and the function of the deep sea ecosystem can only be speculated upon at present. Comparison of the number of species in major groups found on the coral to those occurring in coastal waters suggest that

- **large immobile or slow moving species have been best recorded, such as sponges, starfish, sea urchins, bryozoans, hydroids and other corals and anemones;**
- **fast moving and secretive fish have been overlooked;**
- **smaller species, and those more difficult to observe and identify, have not been collected or identified. These include copepod and amphipod crustaceans, and nematode worms;**
- **groups with species of varying size and visibility, such as polychaete worms, gastropod and bivalve molluscs, have been only partly sampled and identified.**

The numbers of species of the various animal groups associated with *Lophelia* reefs are 18 - 30 % of their number in coastal seas around Britain and Ireland. If the above factors are taken into account, and we expect about 20 % of the number of coastal species for each taxonomic group to occur in the deep sea, then it is likely that the number of species on *Lophelia* reefs will be doubled with further research (still excluding protozoans and microbial species).

The coral has been damaged by deep water trawling for about 30 years.

The most heavily trawled parts of the deep sea appear to be (there is no exact location information available) the edge of the continental shelf, where *Lophelia* reefs are most recorded. Depths down to 1500 m are now trawled, ploughing the seabed and removing large numbers of fish. Damage by bottom trawling for fish has turned parts of reefs to rubble off the coasts of Norway and Shetland. Despite its deep water habitats, the coral can grow at similar rates to tropical shallow water corals. Norwegian studies indicate it grows at 6 mm per year, so reefs of 1 to 2 m high are hundreds of years old. Trawler damage can thus

destroy this unique habitat which would take centuries to recover (and only if not damaged again).

The impacts of trawling on deep sea coral ecosystems will be significant because the fauna of such areas would not be tolerant to physical disturbance. Coral reefs in the tropics are known to be very vulnerable to physical damage. Fisheries may also affect deep sea ecosystems through removal of the fish predators from the food web. The Convention of Biological Diversity obliges countries to protect and research both the economic (fish, shellfish, seaweed) and ecosystem (sea bed species of indirect economic importance) aspects of biodiversity, but it has yet to be implemented in Ireland.

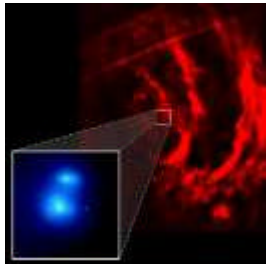
Other countries cannot be relied upon to adequately study and protect Ireland's natural resources.

The absence of Irish based ecological research on the deep sea is of concern because future opportunities and benefits to society may be lost by uncontrolled and wasteful exploitation of deep sea resources. Mineral resources are eventually used up, but biological resources (i.e. biodiversity) can last forever if managed sustainably. The importance of the reefs as a habitat for other species and consequent economic importance for fisheries, and in the nutrient (carbon, nitrogen, etc.) cycles of marine ecosystems, can not be assessed with the current state of knowledge.

The author thanks Jan Helge Fosså, Pål B. Mortensen, and Torleiv Brattegard (Institute Marine Research, Bergen), Alex Rogers (University of Southampton), Andre Freiwald (University of Bremen), Martin Hovland (Statoil Norway), Ben de Mol and J. P. Henriet (University of Gent), John B. Wilson (Royal Holloway University of London), Geoffrey O'Sullivan and Dan Minchin (Marine Institute, Dublin), Kevin Flannery (Dingle), Declan Quigley (Dublin), Keith Hiscock (English Nature, Peterborough), Murray Roberts (Dunstaffnage Marine Laboratory), Andrew Wheeler (National University of Ireland, Cork), Chris Emblow (Ecological Consultancy Services Ltd, Dublin), and Pat Shannon and Viram Unnithan (NUI, Dublin), for helpful information and unpublished observations used in preparing this article.

This article is dedicated to the government marine engineer who believed there was nothing much living in the deep sea off Ireland.

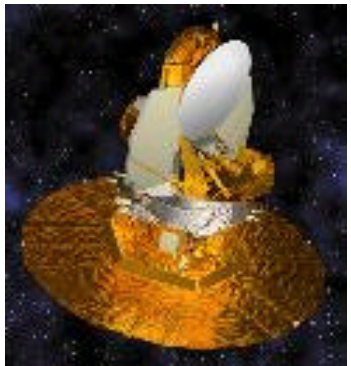
<u>An article was also printed in the Irish Times</u>



This composite image shows the first halo of X-ray emission detected around a young cluster of stars, known as the Arches cluster. The Chandra X-Ray Observatory data is seen as the diffuse blue emission in the inset box and represent the 60-million-degree gas that envelopes the multitude of young stars in the cluster. The Chandra data overlay a **Hubble** Space Telescope infrared image of the same region, in which some of the individual stars in the cluster can be seen as point-like sources. Both the X-ray and infrared observations are then shown in context of the filamentary structures that appear in radio wavelengths displayed in red. REUTERS/Nasa-Handout

This recent artist's conception of the Cassini orbiter shows the Huygens probe, left, separating to enter the atmosphere of Titan, a moon of the planet Saturn, shown in the distance. Scientists said Tuesday, June 19, 2001, they will redesign the Cassini mission as the spacecraft hurtles toward Saturn to prevent losing data collected from the Huygens probe it will drop onto the planet's moon Titan in 2005. Mission planners will delay releasing the Huygens probe from Cassini until February 2005, during the spacecraft's third orbit of Saturn. . (AP Photo/**NASA**, Jet Propulsion Laboratories)

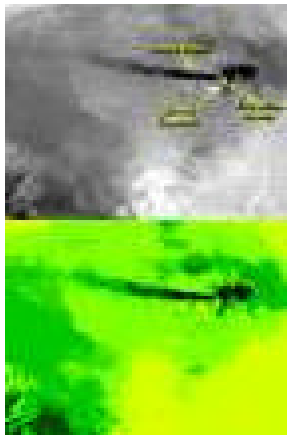
The Genesis spacecraft is displayed for the media at the Kennedy Space Center in Cape Canaveral, Florida June 13, 2001. The **NASA** spacecraft, scheduled for launch July 30 aboard a Delta II rocket, is expected to fly one million miles from the earth to gather and return samples of solar wind. REUTERS/Joe Skipper



A spacecraft that looks a bit like a foil-covered umbrella aims to take the "ultimate baby picture" of remnants of the theoretical Big Bang that gave birth to the universe, astronomers said June 12, 2001. **NASA**'s $145 million MAP craft -- short for Microwave

Anisotropy Probe -- is set for launch from Cape Canaveral on June 30, 2001.

The unstaffed probe will swing past the Moon on its way to an orbit around a point 1 million miles (1.6 million km) from Earth in the direction away from the Sun. From this vantage point, MAP will take note of the tiniest fluctuations in temperature, down to one-millionth of a degree Fahrenheit, searching for what remains of the explosion that many astronomers believe started the universe some 14 billion years ago.



The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) captured this thermal image of the erupting Shiveluch volcano on Russia's Kamchatka Peninsula, June 4, 2001. Shiveluch rises to an altitude of 2,447 meters (8,028 feet). The active lava dome complex is seen as a bright (hot) area on the summit of the volcano. To the southwest, a second hot area is either a debris avalanche or hot ash deposit. Trailing to the west is a 25-kilometer (15-mile) ash plume, seen as a cold "cloud" streaming from the summit.

The lower image is the same as the upper, except it has been color-coded: red is hot, light greens to dark green are progressively colder, and gray/black are the coldest areas.