

# Fish 'N' Chips

A Monthly Marine Newsletter  
April 2001 Issue

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## From Liz

By Elizabeth M. Lukan 4/28/01

***New Email Address!*** After having troubles with my email lately, I've decided it was time for a change. Effective immediately, Fish 'N' Chips' email address is fishnchips@mindspring.com. My old email address ([fishnchips@mail.com](mailto:fishnchips@mail.com)) is being phased out but for now it's still be valid - I'm keeping it as a backup. (Use [fishnchips@mail.com](mailto:fishnchips@mail.com) - updated 10/02/05.)

### ***Visit This Month's Subscriber's Tank Showcase***

Lisa Bennett's Reef Tank is this month's Showcase and can be seen at <http://www.marinefiends.com/showcases.html> (updated 8/24/04).

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## Breeding Pterapogon kauderni (Banggai Cardinals)

By Rennie Bowe (Manchester, UK)

Edited By Elizabeth M. Lukan 4/19/01

Let me state at the outset that I am no expert, nor did I intentionally set out to breed Cardinals. I simply wish to pass on my successes and failures in the hope that it might help others to achieve the eventual success that I have had. Without the assistance of keen amateur aquarists I firmly believe that the future of the Banggai Cardinal is bleak. In nature they are found in a limited area that is already under pressure and, unlike the various species of clown fishes, they are not commercially viable due to the fact that they produce so few offspring per mating.



My one hundred and twenty gallon reef tank has been up and running for some 18 months, during which period it has accumulated an eclectic display of corals, invertebrates and fish, the first of which were three adult Cardinals. Mistake number one. I was unlucky (foolish) enough to end up with two males and one female. Although the most passive and "reef friendly" of fish, when ready to mate, the males become extremely aggressive towards each other. I ended up with a pair, a female, and a very ragged male, the results of his battle to the death with the other male. In retrospect this was stupid of me, as it is fairly easy to distinguish the sexes; the males having a more pronounced and squared off jaw line.

Some weeks later I noticed the male had stopped eating. As an aside it is worth noting that very few Cardinals will take prepared foods, so a potential owner must always have on hand frozen or live foods. I became quite concerned, then I noticed his vastly extended jaw line and became even more so. As the days progressed I noted he became very still, seldom moving from one of the least turbulent areas in my reef. About his only movement was a curious sort of yawning motion. Then all was revealed! One morning during one of his "yawns" I noticed two tiny heads poking from his cavernous mouth. These minute fry were an exact replica of the adult in every respect, truly a wonder to behold. The day after the male was eating again and the fry had vanished. OK, so now I owed nature at least three Cardinals; time to do some serious research.

Very little has been published in books, that I could find, on breeding Cardinals. Through email and the web I was able to pick up a few tips and hints. The fry are released at night and immediately seek the sanctuary of some protective object / creature from which they dart out on occasion to feed from the plankton mass. Well it was a start!

Three weeks later I noticed the male had stopped eating again. Being more "clued up" this time I was able to see a clutch of large pink eggs in his mouth as the yawning had started again. I

guess this is some sort of stirring action designed to keep the eggs oxygenated and free from debris. A week and a half later he was eating again, but no fry. This happened for a second time, then I think I figured it out. The male is going without food for several weeks with only a few weeks in between; the poor chap must be starving! There then followed a period of intense observation. I now know that prior to laying her eggs the female slides along the side of the male and does a sort of wriggle dance. This is my cue to start "bulk feeding" the male, not easy in a tank that contains many other, some larger, inhabitants. Here the male Cardinals biology helps a great deal. He may not be the biggest fish in the tank, but boy he has the biggest mouth! He now gets a period of several days when he is fed large chunks of squid, krill and lance fish until he can eat no more. Since starting this regime the male has not aborted a single clutch.

Protecting the fry once they were out of the adult's mouth now became the big issue. Over a period I saw them consumed by a green hammerhead coral, a plate anemone and several species of fish. I tried netting the fry, I tried siphoning them, nothing worked. There were two factors working against me; the structure of my reef with its densely packed corals and the amazing power and speed of these four millimeter fry. Working on a tip received from a fellow reefer I introduced a spiny urchin to the reef. I am convinced that the male Cardinal actively seeks out the urchin when it is getting close to release time as, on three occasions now, I have found the fry swimming between the spines when the urchin has been in different locations within the tank. I have never observed this behavior though. No I'm not lazy! On numerous occasions I have stayed up to observe the tank under dim red lighting until three and four in the morning. I have also tried getting up at 5am, but I have never seen the release. I guess this is just one of those things a chap likes to do in private! It does not help that the total time from eggs through fry to release is inconsistent. I have no idea (yet) what natural event, if any, triggers the release.

The fry are very, very reluctant to leave the urchin and move with him for days at a time wherever he goes. Eventually though, the fry will become a bit bolder and venture a fraction and zap, some reef inhabitant or other will get them. The knack I have discovered is to steer the urchin into a space where I can maneuver a net without the fear of upsetting the reef or near by corals. When the urchin is on the rear glass this is easily achieved by razor blading the glass, leaving only a green "path" in the direction you want him to go. In other locations a gentle brushing of the spines with a child's paint brush will cause him to move in the desired direction. Getting him to stop when he gets there is another matter! Once both the urchin and the fry are somewhere "safe" I introduce a small net and scoop the fry from within the spines with a high degree of success. Some times an odd spine or two gets broken off but the urchin doesn't seem to mind, they grow back in any event. Having netted a fry I transfer it to a breeder net suspended from the metal halide lights above the tank; safe at last! I did think I was being unfair to the urchin at one stage, so constructed an "urchin" out of cocktail sticks

and milliputy to the correct dimensions. No way was the adult Cardinal having any of it, he completely ignored the structure in favor of the real thing every time. This dummy urchin now sits inside the breeder net to keep the fry company. They are obviously not as astute as the parent because they quite happily swim between the wooden spines.

The final hurdle is feeding the young. This for me turned out not to be a problem as I had been conducting some experiments with a blend of cryopreserved algae, a 25% mix of Tet, Nanno, T-ISO, and Pavlavo strains that I imported from a company in the USA. I extracted a couple of gallons from the main reef into a small glass tank, inserted an air line with diffuser, and added brine shrimp eggs. Once the eggs hatch I drip feed this small tank with a solution of the algae. Twice a day, when the actinic tubes are on, but not the halides, I scoop up a wine glass full from the brine tank and feed it to the fry, replenishing the brine tank with a wine glass full of reef water. Every other day I add some more brine eggs and top up with RO / DI water as required. This has given me a continuous supply of mixed sized brine shrimp to feed the fry, with the additional benefit of also feeding both algae and the brine small enough to escape the breeder net to my other reef inhabitants. Once the fry attain a noticeable growth, I add some frozen baby brine to the mix in order to wean them off live foods. My biggest fear is that the brine tank will "crash" leaving me with nothing to feed. To date this has only happened once, during my early experiments when I overfed algae to the brine tank causing it to stagnate.

If I had started out with the intention of breeding Cardinals there is no way I would have set things up as they are now, but as I said at the beginning, the whole thing was an accident in the first place. I think I have demonstrated however that your average hobbyist with your average mixed reef setup can, and indeed should be encouraged to breed this truly magnificent reef inhabitant ... from captive bred stock only though please!

### ***Specific Equipment Used:***

- Two gallon glass tank.
- Small air pump, tubing and diffuser.
- Child's paint brush.
- Razor blade on a stick.
- Breeder net.
- Small capture net.
- Algae – This cost me \$75 for one liter + \$25.59 carriage, import tax etc., however I now have enough algae to last me several years at the current rate of usage!

### ***Editor's Note:***

This article was originally published on the ReefsUK Website. ReefsUK can be found at <http://www.reefsuk.org/>. Special thanks to Mark Taber, owner of ReefsUK, and Rennie Bowe for the

permission to reprint the article. The extent of my editing of this article was reformatting it into Fish 'N' Chips.

***Photo Credits:***

The Banggai Cardinal picture is compliments of Lisa Bennett. You can see more of Lisa's tank on her site at <http://www.mogga.com/reef/index.htm> (*url dead 03/17/06*). Lisa is also this month's Tank Showcase (<http://www.marinefiends.com/tanks/tanks01/0401-ts.html> (*updated 8/24/04*)).

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## What's Up @ ReefsUK - <http://www.reefsuk.org> -

By Elizabeth M. Lukan 4/28/01

**4/4/01:**

Richard Rajski's forth article on his GARF Tank is now on the site, complete with pictures. From the Marine Aquarium section, click Articles.

The demand for ReefsUK's free corals has been so high that they cannot keep up. The Free Coral Campaign is on hold until ReefsUK can sustain the high demand.

Advertise your own propagated corals through ReefsUK's propagation database, you can sell or trade them with other hobbyists.

A new picture library will be added to the Marine Aquarium section of the site. It will contain pictures of members tanks. This new section will go live by the end of this month.

To join the ReefsUK Mailing List, send an email to [post@reefsuk.org](mailto:post@reefsuk.org).

To join ReefsUK Chat (Email Discussion Group), visit the ReefsUK Website for instructions.

***Editor's Comments:***

Information in this section covers the latest happenings at Mark T. Taber's ReefsUK Web Site. Mark has given me permission to publish any information from his mailing list that I feel would be of interest to Fish 'N' Chips subscribers. So, the above, although reworded by me,

should be credited to Mark or to Derek Scales who works closely with Mark on the running of ReefsUK. The dates in bold coincide with Mark or Derek's mailings and are provided as a reference.

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## Caught In The Net

By Elizabeth M. Lukan 4/28/01

*#reefs moves back to xnet:* #reefs, the chat network for Reefs.org (<http://www.reefs.org/>) has moved back to the xnet IRC network because IRCstorm has proven too unstable. Reefs.org asks that everyone change the settings on their irc program. Instructions can be found at <http://www.reefs.org/access/index.html>.

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## Marine News

By Elizabeth M. Lukan 4/27/01

4/16/01 - US, Two studies show that greenhouse gas emissions have caused the world's oceans to heat up significantly over the last 50 years. The entire news release can be found at <http://ens.lycos.com/ens/apr2001/2001L-04-16-06.html> (*url dead 8/24/04*).

4/18/01 - US, Robotic floats have been launched collect information on the role of plankton and other living things in the ocean's carbon cycle. The entire news release can be found at <http://ens.lycos.com/ens/apr2001/2001L-04-18-09.html> (*url dead 8/24/04*).

4/26/01 - US, Leading environmentalists, including the NRDC (Natural Resources Defense Council), Jean-Michel Cousteau and actor Pierce Brosnan, announced plans to oppose the new sonar system developed by the US Navy that could have widespread impact on the oceans. The entire news release can be found at <http://ens.lycos.com/e-wire/Apr01/26Apr0103.html> (*url dead 8/24/04*).

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## Chips...er...Tips

### Changing Light Bulbs #2

By Elizabeth M. Lukan 4/19/01

In the February issue, my tip was that all bulbs should be changed after 2500 hours of burn time - 3000 hours at the most - regardless of bulb type (Normal Fluorescent (NO), Very High Output Fluorescent (VHO), Metal Halide (M/H), and Power Compacts (PC)).

This information should have been credited to Frank M. Greco as it was his research that produced the 2500/3000 hour replacement suggestion. Frank is the SysOp of Animalforum.com's Aquarium Newsgroup (<http://www.animalforum.com/>). Thank you Frank and my apologies for the omission.

Shortly after this tip was published, Subscriber Tim Tucker emailed me saying that this replacement timeframe was not applicable for the Iwasaki 65K bulbs which had been tested to last twice as long without any significant spectral shifting. This testing had been done by Dana Riddle and was published in "The Captive Reef" in 1995 by Energy Savers Unlimited.

This update is to give credit where credit is due, to thank Tim for the information, and to let everyone know of the two different results from Dana Riddle and Frank Greco's research.

**To Submit Your Tip:** Send your tip via email to [fishnchips@mail.com](mailto:fishnchips@mail.com) and I'll publish it in an upcoming issue of Fish 'N' Chips. I'll write it up for you or you can do it yourself if you are so inclined. Make sure you let me know if I can include your name and email address or if you'd rather go anonymous.

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## Upcoming Events

By Elizabeth M. Lukan 4/28/01

Event	Start Date/ Time	End Date/ Time	Location	Event Details, Notes, and For More Info
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Aquarist Profile Survey	Aug. 2000	Open Ended		<b>Info:</b> What is the profile of a marine aquarist? Visit the #Reefs website at <a href="http://www.reefs.org/">http://www.reefs.org/</a> .
Mandarin Survey	Jan 2001	Open Ended		If you have ever kept a mandarin, please fill out this survey, even if it has died. Visit the #Reefs website at <a href="http://www.reefs.org/">http://www.reefs.org/</a> .
Seahorse Exhibit	4/20/00	April 2001	New York Aquarium	<b>Info:</b> Some of the animals to be featured are leafy sea dragons, weedy sea dragons, pygmy seahorses, pot belly seahorses, local seahorses, giant seahorses, and pipe fish. <b>Where &amp; Contact Info:</b> Brooklyn Aquarium, West 8 <sup>th</sup> Street and Surf Avenue, Brooklyn, NY (USA), 11224. Phone: (718) 265-FISH.
Message Board Poll Contest	now	5/1/01		<b>Contest Info, Etc.:</b> Just go to fishroom.com's ( <a href="http://www.fishroom.com/">http://www.fishroom.com/</a> ( <i>url dead 10/03/05</i> )) The Cove message board and reply to the polls posted there. <b>Prize:</b> Barracuda RO/DI Unit

Message Board Poll Contest	now	5/1/01		<p><b>Contest Info, Etc.:</b> Just go to fishroom.com's (<a href="http://www.fishroom.com/">http://www.fishroom.com/</a> (<i>url dead 10/03/05</i>)) The Reef message board and reply to the polls posted there.</p> <p><b>Prize:</b> 20 lbs. Florida Keys aquacultured live rock</p>
Fishroom.com Survivor	4/1/01	7/1/01		<p><b>Info:</b> 32 contestants, 2 tribes will be chosen, 1 person will win. Visit the Fishroom.com at <a href="http://www.fishroom.com/">http://www.fishroom.com/</a> (<i>url dead 10/03/05</i>).</p> <p><b>Prize:</b> 20 lbs. of Florida aquacultured live rock and a choice of CustomSeaLife 15watt Hang-on UV Sterilizer or AquaC Remora Protein Skimmer.</p>
MACNA XIII: "The Living Seas"	8/17/01 <i>New Dates</i>	8/19/01 <i>New Dates</i>	Baltimore, Maryland, USA	<p><b>Info:</b> For more information, visit <a href="http://www.cmas-md.org/">http://www.cmas-md.org/</a></p>
2nd International Conference on Marine Ornamentals	11/27/01	12/1/01	Walt Disney World Resort, Lake Buena Vista, Florida, USA	<p><b>Info:</b> For more information, visit <a href="http://www.ifas.ufl.edu/~conferweb/mo">http://www.ifas.ufl.edu/~conferweb/mo</a> (<i>url dead 10/05/05</i>)</p>
International Coral Reefs Conference of Paris	March 2002		Paris, France	<p><b>Info:</b> <a href="http://www.circop.com/">http://www.circop.com/</a>.</p>

**To Submit Your Event:** Send your event and all the specifics (date, time, location, pricing, contact info, etc.) via email to [fishnchips@mail.com](mailto:fishnchips@mail.com) and I'll publish it in all issues of Fish 'N' Chips prior to the event.

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## Prove It!, a Bibliography

By Elizabeth M. Lukan 4/28/01

**Article:** Marine News

- Environment News Service, <http://ens-news.com/>

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## Newsletter Disclaimer

To subscribe to Fish 'N' Chips, ~~send a blank email to FishNChips-subscribe@yahoogroups.com or go to <http://groups.yahoo.com/group/FishNChips/>~~ visit <http://www.marinefiends.com/> (*updated 8/24/04*).

To unsubscribe, ~~send an email to FishNChips-unsubscribe@yahoogroups.com~~ visit <http://www.marinefiends.com/> (*updated 8/24/04*).

Any and all comments, suggestions, etc., should be directed to [fishnchips@mail.com](mailto:fishnchips@mail.com).

The Fish 'N' Chips Website can be found at <http://www.marinefiends.com/> (*updated 8/24/04*).

To view the current issue of Fish 'N' Chips, visit <http://www.marinefiends.com/current.html> (*updated 8/24/04*).

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