

Rounds

Animal Health
Department

Medical Rounds

"medicine for all"



Caring for Stranded Marine Animals

NATIONAL
MARINE
LIFE
CENTER

Notes

Veterinary Research
Department

Under the microscope

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Rounds Notes is a report on the health of animals at the National Marine Life Center from Sea Rogers Williams VMD for the staff, volunteers, and community of the center including professionals involved the captive care of similar species, the views expressed are not necessarily that of NMLC. Information in Rounds Notes should be considered confidential and used solely to benefit the health of aquatic animals everywhere.

June 27, 2013

Rounds Notes

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Headlines News: Can You Hear Me Now

Release day for Townsend

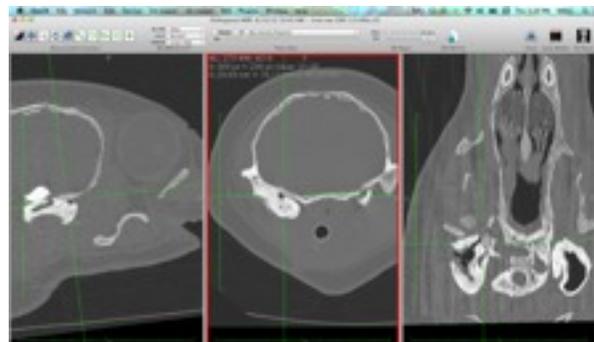
Townsend is the first seal to be rehabilitated under our current stranding agreement with the University of New England's Marine Animal Rescue Center, he was a mild respiratory case, a not-so-sick Harbor seal to see how we worked, check our water quality with a live animal, refine and get back into the swing of things with seal-care, husbandry, and feeding.

Of course, the best laid plans of seals and men, and shortly after arriving he developed an aural (ear) discharge. This was before we could take digital radiographs, and the film radiographs were inconclusive, we scheduled a CT with our partner organization WHOI-CSI who have gone out of their way to personally donate time and effort for Townsend. And the scan showed no evidence of osteomyelitis (bone infection) but a middle ear infection none the less.

We tried the standard medical treatments which most time are not effective for this type of infection, and as expected they did not work. Thanks to the superb staff of C CVS, in particular Drs Kohcin, and Rahilly, we were able to have a Ventral Bulla Osteotomy (VBO) performed. This procedure carries risks but is the least of the invasive procedures for the middle ear. The surgery was successful, but healing was delayed and we experienced a greater than expected discharge from the drain, and a discharge returned from the ear indicated that the infection was not controlled. To confirm this, we called on WHOI-CSI again who helped out, the CT showed not only a

Things we Learned from Townsend

- 1- Otitis media can exist with least of external signs
- 2- medical therapy is not effective
- 3- ventral bulla osteotomy late in the disease also may not resolve the condition
- 4- TECA and LBO can be performed on seals and can result in resolution of the condition
- 5- seals with uni-lateral TECA are not deaf
- 6- osteomyelitis can resolve if the underlying disease is controlled

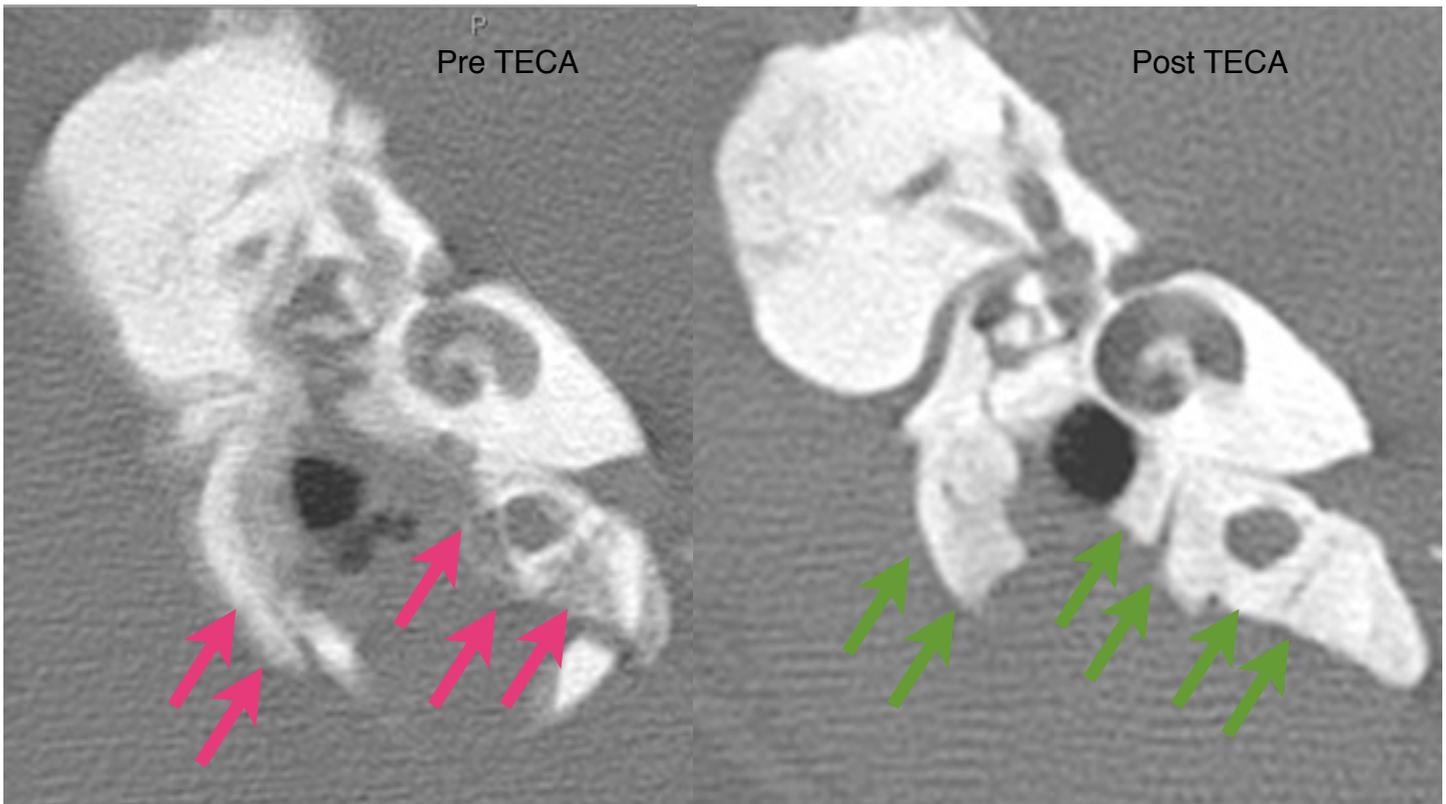


persistent infection but sequestra (necrotic bone that only forms in the presence of infection) within the tympanic bulla and the dreaded presence of osteomyelitis. A second, riskier, and more invasive procedure, a total ear canal ablation (TECA) and lateral bulla osteotomy (LBO) was scheduled again with the specialists at Cape Cod Veterinary Specialists. Again the surgery was flawless. Healing was complicated by dehiscence due to the inability of the blubber layer and thin skin of seals to adequately hold together, but the incision healed in by granulation, and is now completely healed.



A final CT at WHOI CSI confirmed the resolution of the infection, removal of the sequestra, and showed healing of temporal bone and perhaps most importantly, a patent auditory tube so air/gas can be equalized when diving.

Townsend is the first seal with surgical correction of otitis media that we have released into the wild so we wish him well and thank him for what we have learned and that we will hopefully apply this knowledge to help other seals in the future.



note the healing of the temporal bone osteomyelitis (red arrow = bad; green arrow = good)

Clinical Update: Lucky, may be lucky after all

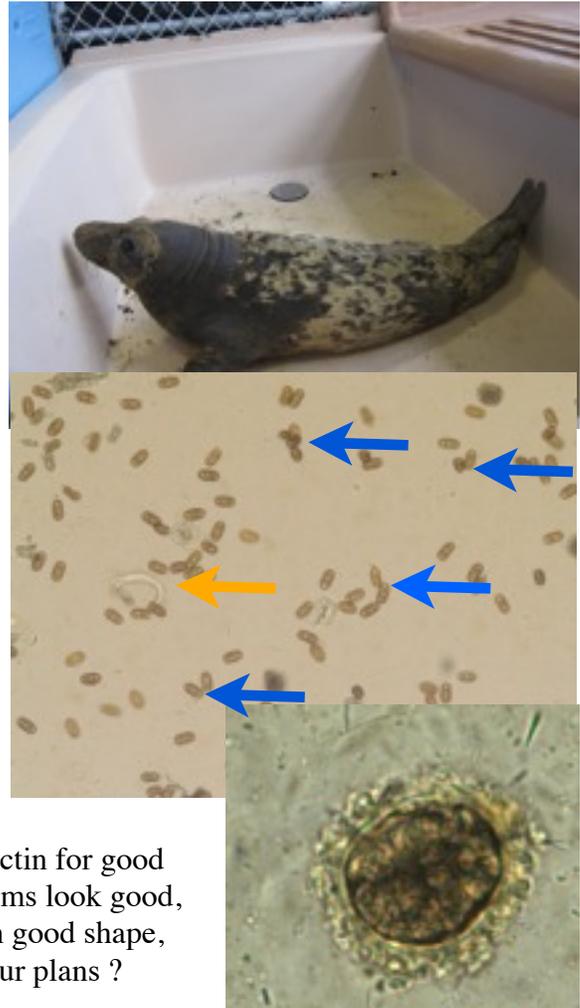
parasites are finally starting to fall

With verminous (worm based) pneumonia, it is important to kill off the parasites slowly while supporting the seal, too quick of a die off of these worms causes too much for the body to deal effectively, so we've taken the slow and steady approach.

First was low dose Febendazole 10 mg/kg PO SID 3d, and low dose Praziquantel 2.5 mg/kg once.

This may have knocked things down a bit, but Lucky was still passing whole worms in the stool (*Pseudoterranova*), and if anything the number of *Cryptocotyle* eggs exploded (see right, blue arrows), and there were still lung worm larva (orange arrow).

But, the wounds were healing, Lucky was tearing and eating fish and getting stronger, so we did our first ivermectin dose 0.2 mg/kg PO once and a standard dose of praziquantel at 5 mg/kg PO once. And 'waa laa', no more trematode eggs, no more lungworm fecal larva, and only the residual *Pseudoterranova* eggs, which a standard dose fenbendazole 25 mg/kg PO SID 3 d, should eliminate. We'll give that and one final dose of ivermectin for good measure, and see if can fatten Lucky up a bit. Chest films look good, so if everything goes according to plan we should be in good shape, my concern is why are animals so reluctant to follow our plans ?



Sea Turtles: So long and thanks for all the fish, squid, and crabs...

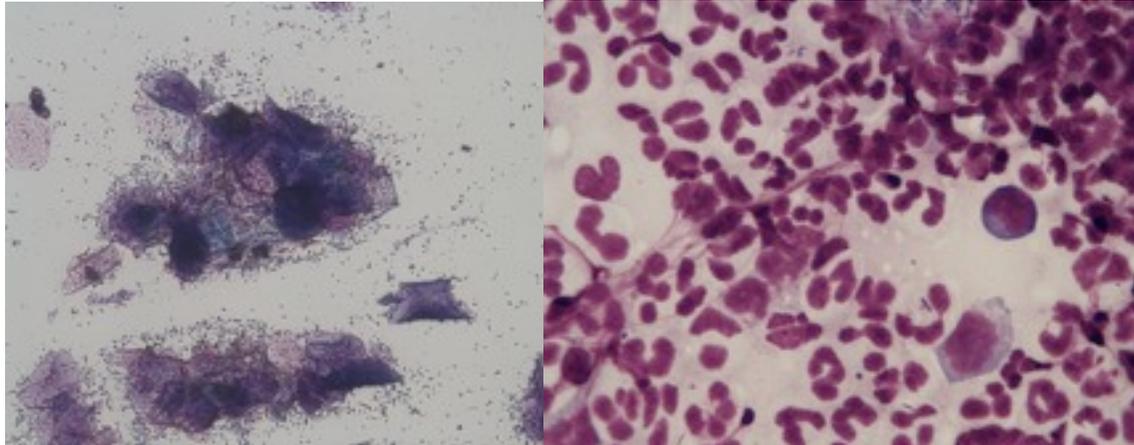
Sea Turtles Released In Maryland

The final 4 Kemp's ridley turtles all had normal physical exams and showed good weight gain and growth, their only active problems had been elevated tissue enzymes which finally had resolved or showed marked improvement and were well on their way to resolving. A decision was made based on recent blood work to approve all for release. Kate drove the turtles to join a release of some Kemps' from the National Aquarium who were likewise approved for release.



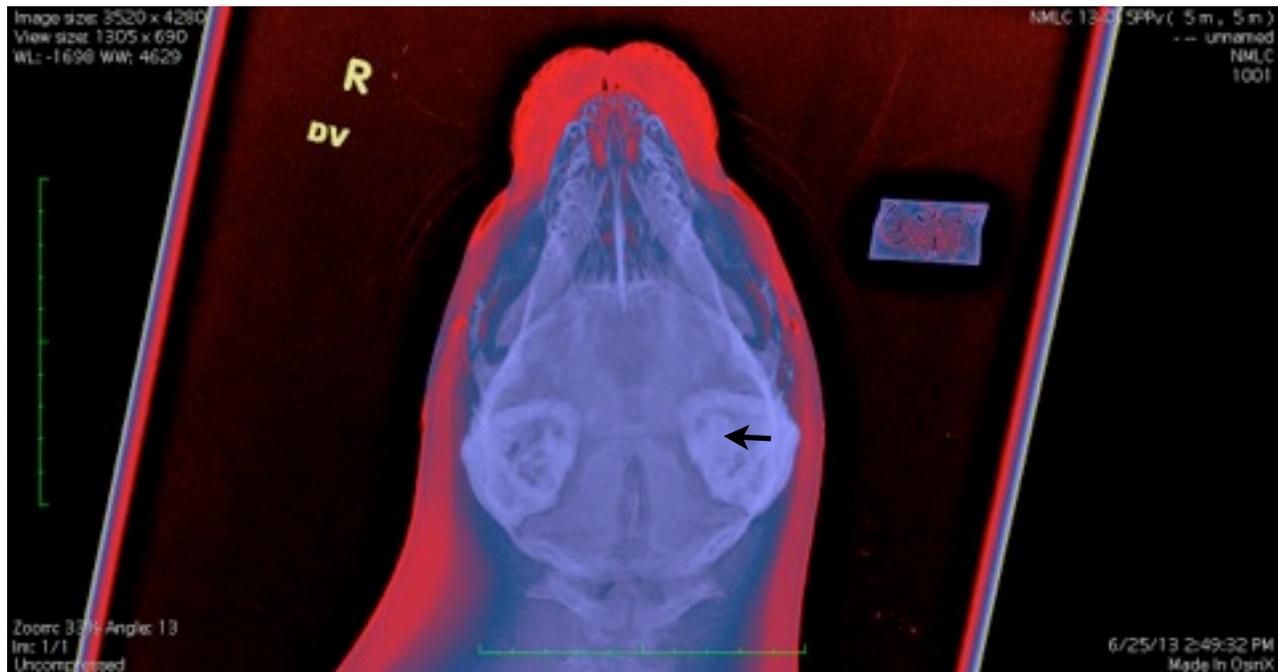
Phocids, the true seals: Say what ? Two More Ear Cases ear case transfers from UNE

Malleus: Malleus is a male weanling Harbor seal with a Left ear discharge:
No other physical exam abnormalities, so we started with cytology of each external ear



The right ear (above to the left) is all squamous epithelial cells and surface bacteria (the external ear canal is not sterile), while the left ear (above to the right) shows suppurative inflammation and intracellular bacteria, classic for otitis.

So, we performed a canalography, where a radio-opaque dye is injected into the external ear, if the ear drum is intact, the dye will pool at the ear drum and not enter the middle ear, if the ear drum is ruptured, the dye enters the middle ear. (artificial color to enhance findings, CLUT=Stern)

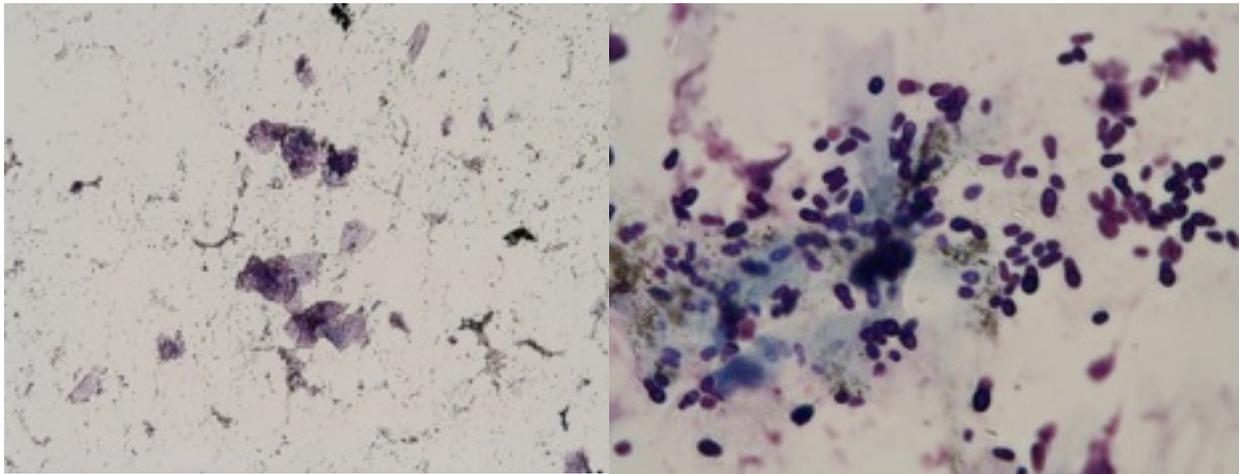


in Malleus, the dye filled the left middle ear (black arrow above).

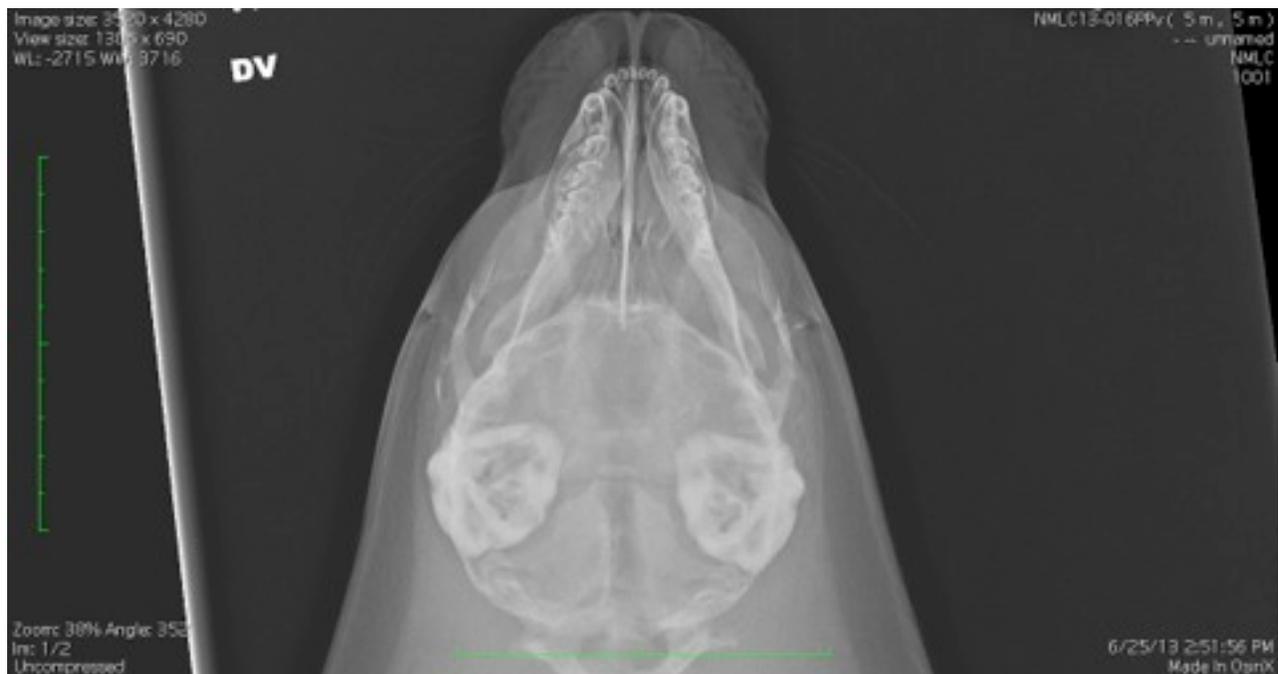
The history, signalment, cytology and contrast radiographs all point to another case of Otitis Media. We'll start conversations with Dr. Kochin and see if we can come up with a plan.

Incus: Incus is a male weanling Harbor seal with a Left ear discharge:

This little seal looks like Malleus, and the rest of his physical exam was likewise normal, except for a mild discharge from the left ear.



The cytological picture is very different however, the right ear (above to the left) shows the skin and surface bacteria, but the left ear cytology (above to the right) shows numerous budding *Malassezia* type yeast. Further, the canalography was interestingly normal.



There is not evidence of otitis media in Incus, however, the sensitivity of our tests can not compare to CT, so we could be missing something here. Any vet knows how to treat *Malassezia pachydermis* otitis EXTERNA, heck I make a living doing this, so we started a topical anti-fungal otic preparation twice a day, and we'll recheck in 1 week. Otitis externa is not a serious disease, but may be uncomfortable, and as long as the ear drum (tympanic membrane) is not damaged and otitis MEDIA established, the prognosis is good.

Terrapins, Cooters, and Turtles, oh my . . . :

MBD, fungal shell disease, lost scutes and re-acclimation oh my indeed

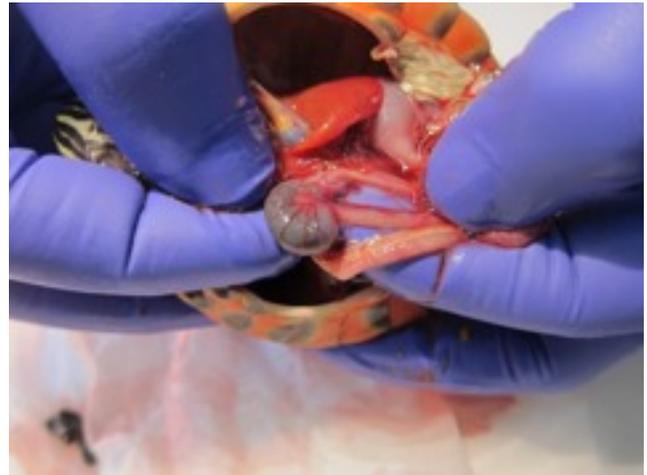
We lost (it died) the most seriously effected of the metabolic bone disease turtles.

Radiographs showed gas distention in the gastro-intestinal tract, compression of the lungs, and advanced metabolic bone disease.

At necropsy, there were GI obstructions, perhaps caused by lack of peristalsis due to impaired calcium levels. This is not an uncommon final pathway for these advanced cases of metabolic bone disease, but this is such a serious condition there are actually many ways for them to die.

The others are getting treated with Vitamin D3 and oral calcium and plenty of UVB, so we are hoping to turn the rest of them around, but at least two more are advanced.

The fungal cooters are doing better. We are scraping the effected shell and applying a topical anti fungal lacquer [Curanail®, 5% amorolfine] once a week. All three are on target for a relatively quick turn around and release towards the end of the summer.



It's also time to meet Penny, a Diamondback terrapin, this turtle awoke from burmation way too early in February, and suffered neurological disease from the hypothermia, as well as damage to her legs and skin. She was treated on and off cape and made her way to the NMLC for a wilding up and resolution of her anorexia before release in the salt marshes of the upper cape.

I'm not sure if this an active shell infection, an osmotic response to the prolonged holding in fresh water, and gradual re-introduction to a brackish environment (currently we're holding the salinity between 5-7ppt).

We started topical therapy and systemic antibiotics, and steamers did the trick, after several months in various rehabilitation centers, we got Penny to eat within the first two weeks.



Under the Microscope: *Corynosoma strumosum*

any shade of gray



Lucky has just be too interesting a case in the parasitology department, and at least this one gray seal seems to have a different species of *Corynosoma* acanthocephalan infection. Lucky passed whole adults in his feces, and we were able to dissect some female acanthocephalans and recover their eggs, technically acanthors. *C. strumosum* is one of the few parasites that have had the complete life cycle worked out.

Adults live in the intestine of seals, sea birds, and occasionally cetaceans. The acanthors are passed in the feces and must be ingested by an amphipod or isopod, which are abundant in most sea water. There the larva hatches and perforates the intestine of the intermediate host and encysts in their body cavity, they now look like tiny adults, but encysted. When the infected crustacean is eaten by a fish, the capsule is digested, the parasite freed, this time the developed hooked proboscis is thrust into the mucosal lining of the intestine and the parasite started to develop. Acanthocephalans

do not have a digestive system but derive all their nutrients across their skin from the host. Once mature they mate and the female started to produce acanthors in as little as three weeks and the cycle starts all over again.

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