#43, June 2013

Newstreams

News, research, on-ground works, innovation and events with a focus on improving fish habitat

AUSTRALIAN NEWS

Tomago wetlands work wins National Trust Conservation Natural Heritage Award
For more than 40 years, almost 600 hectares on the northern bank of the Hunter River was isolated from the estuary behind floodgates and levees. The result was acid sulphate soil problems, extremely poor water quality and a loss of aquatic habitat. Work to restore the Tomago wetlands started in 1993 and included retro-fitting auto-tidal gates to allow a controlled amount of water back into the wetland and other steps to encourage the tide to spread again across the wetland. The transformation is remarkable, with the return of saltmarsh bringing back the fish, crustaceans and birds. The restoration of the area to a fully functioning tidal wetland has attracted world-wide attention and the research and learning gained from this project is being used in many other projects. For more information about this project:
http://www.wrl.unsw.edu.au/site/projects/tidal-restoration-and-wetland-creation-at-the-kooragang-nature-reserve-tomago-nsw/

Or you can listen to an interview with Kylie Russell (Fisheries NSW) on ABC's *The Big Fish* (forward through to 16minutes, 40 seconds):
http://blogs.abc.net.au/nsw/2013/06/snapper-hot-pot-and-snapper-hot-spots-on-the-big-fish.html?site=centralcoast&program=central_coast_the_big_fish

Aerial view of Tomago wetlands with water now across the landscape. Photo: Doug Beckers, NSW NPWS.

Coastal wetland rehabilitation on show
WetlandCare Australia's Coastal 20 Wetlands Project rehabilitated 20 iconic wetlands in northern NSW and south east Queensland. This $2.5 million project was funded by the Australian Government's Caring for Country Program. WetlandCare Australia has estimated that over a 10 year period, an economic return of $330 million has been achieved by rehabilitating these coastal wetlands. To watch a video showcasing the project, go to http://vimeo.com/68745820, or for more information:
http://www.wetlandcare.com.au/index.php/our-work/current-projects/coastal-20-wetlands-project/

Ramping it up
A project to improve habitat and help make more fish has made a big difference on the NSW South Coast. The Ramp it up! project was implemented by Eurobodalla Shire Council with funds from a Recreational Fishing Trust Fish Habitat Action Grant and targeted high profile fishing access spots such as popular boat ramps. The project improved local fish habitat by removing riverbank weeds, revegetating with native vegetation, removing litter and stabilising erosion in and around the boat ramp areas. For more information:
http://www.dpi.nsw.gov.au/aboutus/news/all/2013/habitat-project

Successful development offset
Legacy approvals can be a problem, so the successful negotiation and completion of a development offset is good news for fish habitat. Developer Water Elliott Holdings purchased a development site at Yamba, on the NSW north coast, that held historic approvals to harm and fill a stand of mangroves that had become isolated from regular tidal inundation due to road construction during the 1980s. Using the $30,000 negotiated by Fisheries NSW, Clarence Valley Council has protected 230 metres of Lake Wooloweyah foreshore by installing rock fillets and limited stock access to 10ha of mangroves and saltmarsh occurring on public land. For more information contact Patrick Dwyer (NSW DPI).

Some of rock fillets on the Lake Wooloweyah foreshore (left) and an example of successful accumulation of sediment and juvenile mangroves behind a rock fillet established in 2006 (right). Photos: Pat Dwyer.

Fish getting the equivalent of a cold shower
Cold water pollution is not new, but a recent study has highlighted the impact of the timing and temperature of water releases from large dams on fish breeding success. The research has found that fish rely on both seasonal flooding and low flow periods, as well as water temperatures close to those that occur naturally in the rivers local to where the fish are living. The researchers found more than 90% of golden perch juveniles occurred in unregulated lowland rivers in the northern Murray-Darling Basin, which naturally stop flowing for weeks or months at a time, while regulated reaches now flow constantly. It appears that restoring these natural low flow periods creates the shallow, warm reaches of waterways which produces the food fish depend upon. For more information about this research by Rolls and others:
http://www.sciencedaily.com/releases/2013/06/130611102318.htm

Or read the research article in *Freshwater Biology*:
http://dx.doi.org/10.1111/fwb.12169

In related news, the world's first cold water pollution mitigation curtain is set to be constructed at Burrendong Dam, Central West NSW. For more information:
http://www.dpi.nsw.gov.au/aboutus/news/ministerial

Fish take a screen test
Researchers looking at ways to prevent fish being sucked into and through irrigation pumps have found that screens can help. However, the design of the screens isn't 'one size fits all' and needs to take into account the local fish species likely to be affected. In a field trial, it was found that a key factor was the velocity of the water, rather than the size of the mesh used for the screen. This is

the latest in a series of research reports investigating the use of screens on irrigation pumps. To read more of this study by Boys and others in *PLOS One*:
http://dx.plos.org/10.1371/journal.pone.0067026 [Open access]

Three times a winner for the Dewfish Demonstration Reach
Condamine Alliance is celebrating its third major environmental award in 12 months having won the 2013 United Nations Association of Australia World Environment Day Award for Biodiversity. All three awards recognise the past 5 year's work and achievements of the Dewfish Demonstration Reach project. This project has helped increase native fish populations in the Condamine River, in some cases by 1000%. For more information:
http://www.condaminealliance.com.au/news/river-takes-out-the-trifecta

Fishway shown to help fish
The Moores Creek fish ladder has expanded the territory for 29 species of juvenile fish that have been found in Moores Creek and its tributaries, in Queensland's Fitzroy Basin, including very small barramundi, sea mullet and mangrove jack. The fish ladder was constructed in 2012 to enable access to nursery habitat. Now sampling has confirmed many species are using it. An average 600 fish, mostly juveniles, are being recorded each day. Moores Creek is one of the most intact tributaries in the upper reaches of the Fitzroy, the largest catchment draining to the Great Barrier Reef. For more information:
http://www.fba.org.au/fish-territory-expands-thanks-to-ladder/

No doubt the fish are happy too - smiles all round when monitoring showed juvenile fish using a fish ladder to access nursery habitat. Image: www.fba.org.au

When barriers to fish passage are a good thing
Barriers have been installed to save the rare alpine Shaw Galaxias that was in danger of extinction. Government agencies from Victoria, West Gippsland Catchment Management Authority, VRfish and the Australian Trout Foundation cooperated on a project to protect the only known habitat of this species. Severe storms and floods in 2010 and 2011 had a big impact on the habitat and exposed them to aquatic predators, particularly trout, which quickly reduced the global distribution of Shaw Galaxias to only a 300 metre long reach of a 0.3 metre wide creek. To protect the species, temporary barriers have been installed in the creek to prevent trout moving up-stream as well as a permanent predator barrier near a waterfall, further downstream. For more information, contact Tarmo Raadik on (03) 9450 8600 or tarmo.raadik@dse.vic.gov.au, or visit:
http://parkweb.vic.gov.au/about-us/news/barriers-shore-up-the-future-of-the-rare-shaw-galaxias

The Shaw Galaxias. Photo: Rudie Kuiter.

River Torrens ladders helping fish
Fish ladders have been built on several weirs affecting the wetlands near the River Torrens outlet in Adelaide, South Australia. The two recently completed ladders are stepped concrete ramps, providing very shallow graded steps full of rocks so that water trickles over those rocks and fish access up and down them as required. For more information:
http://www.abc.net.au/news/2013-06-03/native-fish-ladders-to-help-wetlands-breeding-in-river-torrens/4728976?section=sa

INTERNATIONAL NEWS

New beginnings for the Carmel River
Once described '*as a lovely little river. It isn't very long but in its course it has everything a river should have'*, the Carmel River, California, USA, and its fish have suffered the effects of the San Clemente Dam for over 90 years. The dismantling of the 32metre structure will open up 25 contiguous miles of unimpaired spawning and rearing habitat for a threatened run of steelhead trout. Like salmon, steelhead spend most of their lives in the ocean but move upstream to spawn and grow in coastal rivers and streams. This US$83 million project will also restore the natural movement of sediment downstream toward the sea. For more information:
http://newswatch.nationalgeographic.com/2013/06/21/fish-frogs-and-people-to-benefit-from-biggest-dam-removal-project-in-california-history/

From golf course to fish habitat
Restoration activities are transforming an abandoned golf course near North Charleston, South Carolina, USA, into healthy coastal marsh. For 95 years, the 12 acre site had been part of a US Naval base. In 2002, it was part of 30km of coastline and coastal fish habitats affected by an oil spill. This project is the first completed of the restoration projects planned for the 135-acre Noisette Creek Preserve. It involved increasing the tidal exchange and drainage needed to restore this area to a salt marsh and removing roads, drainage tiles and various sources of debris. The old golf course is well on the way to becoming a functioning wetland that will provide the habitat that fish, as well as invertebrates and birds, need. For more information:
http://response.restoration.noaa.gov/about/media/oil-spill-helped-south-carolina-community-transform-abandoned-naval-golf-course-back-healthy-marsh.html

The reconstruction of tidal creeks is improving the flow of tidal water and enabling the establishment of saltmarsh vegetation. Photo: NOAA/Restoration Center/Howard Schnabolk

Dairy farmers improving water quality
Researchers in New Zealand monitored five streams in catchments with pastoral dairy farming as the dominant land use to detect changes in response to adoption of best management practices (BMPs). BMPs included improved stream fencing (cattle exclusion) and disposal of treated effluent using irrigation rather than pond systems discharging to streams. Water quality was degraded and was typical of catchments with intensive pastoral agriculture land use. After monitoring water quality for periods of 7–16 years, the researchers found a decrease in the concentration of suspended solids for all streams, generally increasing water clarity and lower concentrations of potentially problematic bacteria. For more about this research by Wilcock and others in *Marine and Freshwater Research*:
http://dx.doi.org/10.1071/MF12155

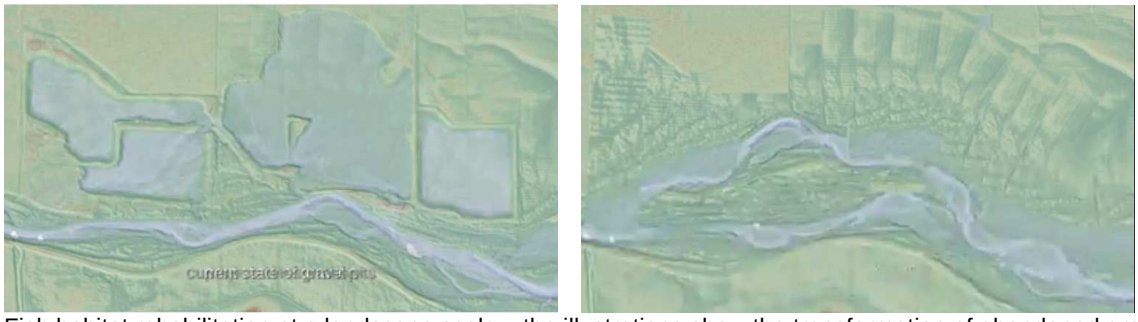
Dredging does no favours for fish in large rivers

Researchers in the USA wanted to know more about the impacts of dredging in large rivers on fish. It was found that total catch, species richness and diversity were all worse where dredging occurred. In addition, generalist species, such as catfish, came to predominate. The dredging modified the main channel, creating deep stretches of water with little variation in habitat. Erosion of the upstream end of the dredged area can also contribute to increasing river depth and subsequent accumulation of fine sediment. The result is a loss of critical shallow-water habitats. Fish also have less food available as increased depth, compounded by water turbidity, reduces light penetration to the river bottom and reduces biomass and diversity of submerged vegetation and algae. For more information about this research by Freedman and others, visit:
http://www.sciencedaily.com/releases/2013/06/130610113008.htm

Or read the research article in *Freshwater Biology*:
http://dx.doi.org/10.1111/fwb.12056

Transforming an entire landscape just for fish

A project in northern California, USA, is taking an understanding of fish ecology to a new level, turning abandoned gravel pits into a complex of wetlands, floodplains and channels specifically aimed at providing ideal winter habitat for salmon. In the past, the focus has been on restoring river habitat by removing barriers and enhancing in-stream habitat. But salmon, like many fish, use different - but equally important - types of habitat throughout the life cycle. As the landscapes are transformed so that there are seasonally natural flows, abandoned gravel pits are being reclaimed as niche habitat for salmon. In some areas, this type of approach has led to more Chinook salmon than have been seen in decades. For more information:
http://www.nmfs.noaa.gov/stories/2012/09/09_06_12gravel_pits.html



Fish habitat rehabilitation at a landscape scale – the illustrations show the transformation of abandoned gravel pits to a complex of habitat with natural flows. Images: http://www.nmfs.noaa.gov/stories/2012/09/09_06_12gravel_pits.html

A Charter for chalk streams

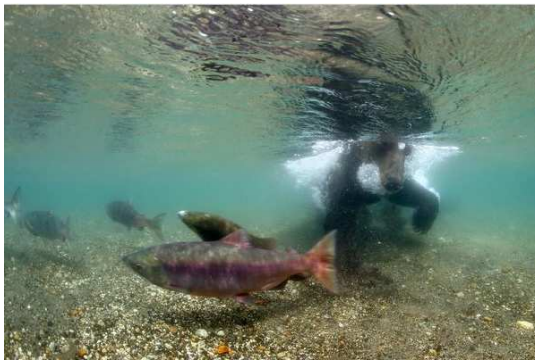
The 'Charter for Chalk Streams' was launched on the banks of the over-abstracted river Beane in Hertfordshire, UK, which was once a famous fishing river and is now little more than a dried up ditch in places. National wildlife and conservation organisations, fishing organisations and local river restoration groups developed the Charter to radically reform water policies that would enable England's endangered chalk streams to return to good health. Chalk streams are recognised as a unique global asset providing a pristine environment for wildlife with rich clean water and high quality habitat. Some 85% of the worlds chalk streams are located in England and many around London have almost disappeared in normal weather conditions. For more information:
http://www.anglingtrust.net/news.asp?section=29&sectionTitle=News&from=2013/5/01&to=2013/06/01&itemid=1649

Grizzly link between trout and elk

A loss of cutthroat trout in Yellowstone Lake, Yellowstone National Park, USA, has led to local grizzly bears looking elsewhere for food, resulting in a drop in migratory elk calf numbers. Grizzly bears historically fed on some of the millions of cutthroat trout that moved up tributaries of Yellowstone Lake to spawn. Problems started in the early 1990s when the aggressive, non-native lake trout were discovered in Yellowstone Lake. Lake trout eat cutthroat trout but spawn deep in the lake bottom, making them rarely accessible to predators such as grizzly bears. Cutthroat trout

numbers have declined up to 90 percent since then. The loss of cutthroat trout is not hurting grizzly bear populations as these bears are opportunistic feeders. If cutthroat trout aren't around, they'll eat something else, such as elk calves. For more information:
http://trib.com/news/state-and-regional/grizzlies-may-be-link-between-drops-in-cutthroat-trout-and/article_822660d6-075b-50bf-9a35-daefa4340758.html

Fisheries managers are also amending regulations so that fishers can give native trout a hand. The limit on non-native fish caught in some areas within the park has been eliminated. For more:
http://www.nps.gov/yell/parknews/13-040.htm



A rare underwater image of a bear fishing, this time in Russia. For this and other inspiring underwater photographs:
http://news.nationalgeographic.com/news/2013/03/pictures/130322-unspoiled-rivers-freshwater/#/most-important-freshwater-bear_65488_600x450.jpg

Resources

Hear about habitat heroes on the ABC
Listen in every other Saturday morning or online to a new 'Habitat Heroes' segment on the ABC's *The Big Fish* program, presented by Scot Levi:
http://www.abc.net.au/centralcoast/programs/central_coast_the_big_fish/

Habitat preferences of small-bodied and juvenile native fish
A research report into the habitat preferences of, for example, juvenile Murray Cod and Golden Perch is available:
http://www.condamineralliance.com.au/_literature_135913/Habitat_preference_of_small_fish_species_-_final_report

Policy and guidelines for fish habitat conservation and management -NSW
This 2013 update helps developers, consultants and government and non-government organisations to ensure compliance with legislation, policies and guidelines as they relate to fish habitat conservation and management in NSW.
http://www.dpi.nsw.gov.au/fisheries/habitat/publications/policies,-guidelines-and-manuals/policy-and-guidelines-for-fish-habitat-conservation-and-management-update-2013

A lifetime's work on Barmah-Millewa Forest
Keith Ward, a wetland ecologist who works at the Goulburn Broken Catchment Management Authority, presents an extended case-study of his 23 years working in the Barmah-Millewa Forest, the largest River Red Gum wetland reserve in the world.
http://www.youtube.com/watch?v=9oRPSrhRoS0&feature=youtu.be

New World Rivers Day website launched
World Rivers Day is set for Sunday September 29th this year. A new website has been launched with information, event plans and promotions, news clippings, and resources:
http://worldriversday.com/

Framework for evaluating aquatic ecosystem connectivity
This resource, prepared by Queensland's *WetlandInfo* describes a process for systematically working through the connectivity of relevant functions of an aquatic ecosystem, and provides a way of understanding and applying connectivity at any level of spatial scale for specific management outcomes:
http://wetlandinfo.ehp.qld.gov.au/wetlands/ecology/landscape/

About *Newstreams*

Newstreams is an email newsletter to keep people up to date about fish habitat activities and important developments in fish ecology and habitat. It is free by email subscription. To **subscribe** or send in your habitat news, email the editor, Liz Baker (newstreams@industry.nsw.gov.au). Back issues can be accessed from

www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams.

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FHN Partners

- Amateur Fishing Association of the Northern Territory (AFANT) http://afant.com.au/
- Australian Fishing Trades Association http://afta.net.au
- Australian National Sportfishing Association - NSW www.ansansw.com.au
- Capital Region Fishing Alliance http://crfa.org.au/
- Ecofishers www.ecofishers.com
- Fisheries NSW www.dpi.nsw.gov.au/fisheries/habitat
- Fisheries Victoria www.dpi.vic.gov.au/fisheries
- Freshwater Fishing & Stocking Association of Queensland (FFSAQ) www.ffsaq.com.au
- NSW Council of Freshwater Anglers www.freshwateranglers.com.au
- NSW Fishing Clubs Association www.nswfca.com.au
- PIRSA Fisheries and Aquaculture www.pir.sa.gov.au/fisheries
- Recfish Australia http://recfishaustralia.org.au/
- RecfishSA www.recfishsa.com.au
- RecfishWest www.recfishwest.org.au
- Recreational Fishing Alliance of NSW www.rfansw.com.au
- SUNFISH www.sunfishqld.com.au
- Victorian Department of Sustainability and Environment www.dse.gov.au
- VRFish www.vrfish.com.au

Website www.fishhabitatnetwork.com.au